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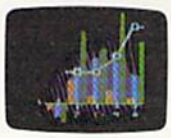

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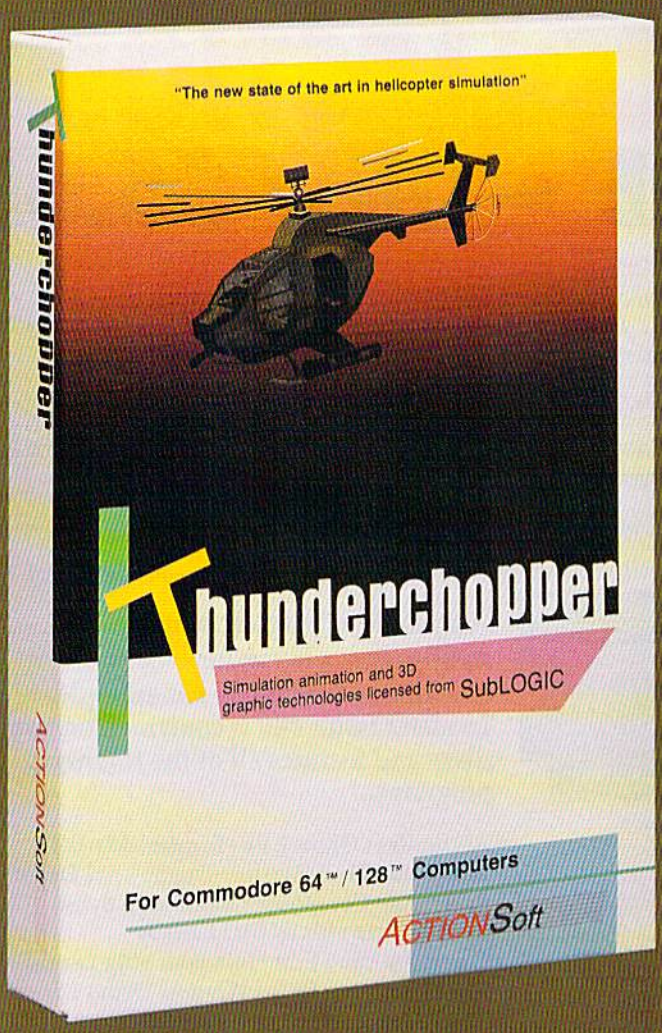
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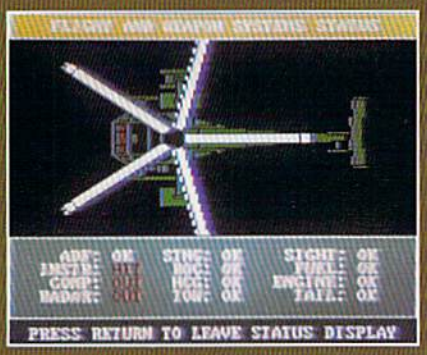

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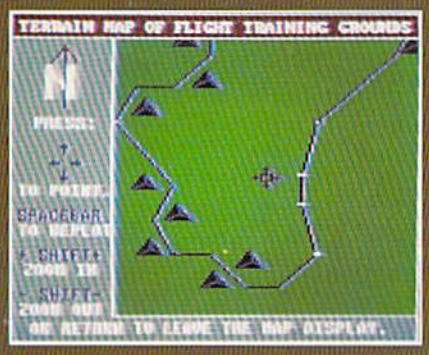


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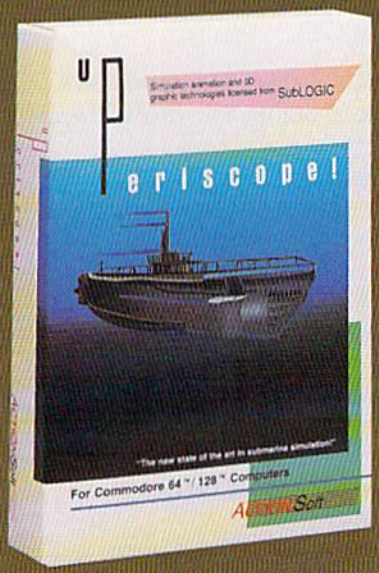
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VOLUME 5, NUMBER 1

# RUN

JANUARY '88

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* THIS ARTICLE CONTAINS A PROGRAM LISTING. THE PROGRAM IS ALSO AVAILABLE ON THE JANUARY-FEBRUARY 1988 RERUN DISK. TO ORDER, USE THE CARD BETWEEN PAGES 80 AND 81.

† SEE RUNNING RUMINATIONS, ON PAGE 8, FOR AN EXPLANATION OF THE LISTING FORMAT USED IN THESE ARTICLES.

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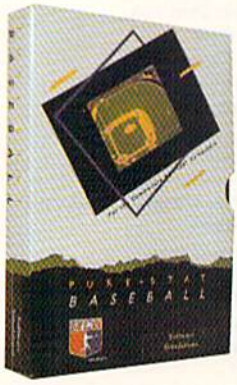


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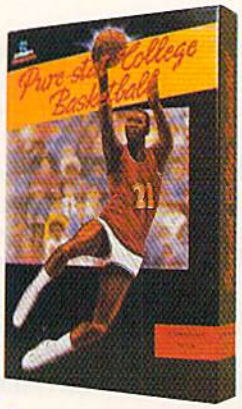


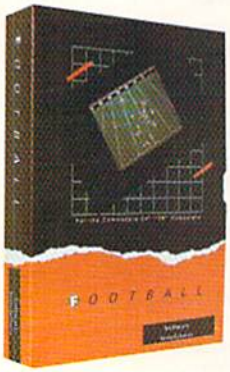


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R-1

# RUNning Ruminations

*A look back and a look ahead, as* RUN *enters its fifth year.*

### Salute the Past, Ring in the New

As we begin a new year, it's a good opportunity to rededicate ourselves to our editorial mission of providing our readers with the most useful coverage of the Commodore marketplace.

To that effect, we have implemented in this issue some changes in staffing and assignments.

Jim Strasma, who has authored *RUN*'s popular Commodore Clinic column since its inception in January 1984, has stepped down from that position. Job responsibilities as PC Lab Manager at Western Illinois University have necessitated this move for Jim, who, as most of you know, was an early pioneer in the Commodore/PET market.

We've enjoyed working with Jim over the last four years and have learned a lot from him. His encyclopedic knowledge of Commodore companies and products was instrumental in establishing Commodore Clinic as one of the most-read columns in the magazine. In his four years with *RUN*, we conservatively estimate that he has answered over 1000 questions through his column—and many more over the phone and through his correspondence with readers.

While we're sad to see him go, we're enthused by the prospect of our own Lou Wallace taking over the column. So readers each month can continue to expect the same insightful and informational answers to their questions and comments.

Beginning with this issue, *RUN*'s Magic column is also experiencing a changing of the guard. *RUN*'s technical editor, Tim Walsh, will be taking over the column for Jim Borden, who will continue to lend his programming expertise to the magazine.

We view these as positive changes that will strengthen the magazine.

Also at this time, we announce a format change in our educational coverage. Beginning with this issue, *RUN* will discontinue publishing the monthly Resource Center column. We will be incorporating our educational coverage in the magazine proper.

Through her column, Associate Editor Margaret Morabito has provided Commodore 64 and 128 owners one-of-a-kind coverage of the Commodore education market, and has subsequently built up quite a following as champion of educational applications for Commodores. She is now writing a book that explores this topic.

We extend our appreciation to Jim, Margie and Jim for their roles as columnists in the magazine and wish them well in their future endeavors. We assure our readers that they can expect the same quality coverage they have become accustomed to as we enter 1988, our fifth year of publication.

### Attention, Readers

This issue features two "blockbuster" programs—*RUN*'s Memo Book and RUN Term 128—that are exceedingly powerful machine language programs with (especially in the case of RUN Term 128) quite long listings.

Because of the length of the machine code, we had to consider several ways of generating listings that could be typed in by our readers.

We considered three main techniques. The first was to use the tried-and-true method of converting the binary files to Basic Data statements consisting of numbers in decimal format (0–255) separated by commas, like this:

```
100 DATA 12,76,34,231,19,45,255,0,64,19
```

One of the benefits of a Basic Data statement format is that you can use *RUN*'s Checksum program to make sure you enter the lines correctly. But, in the case of RUN Term 128, this technique would have resulted in a type-in listing of nearly 14 pages!

A second format would involve a special ML entry program that converts the binary files to a hexadecimal format of 11 pairs of digits. Line numbers and commas are not used, but a space occurs between each pair of digits. It looks like this:

```
0000 A1 34 FF 23 C5 9A DF 5F B4 98 C0
```

Compared to the decimal method described first, this is a more condensed method of presenting the data, but it still would occupy about 10 pages for the RUN Term 128 listing. And, unfortunately, it would also require your typing in a special ML entry program, in itself over two magazine pages long. That means you'd need *RUN*'s Checksum program to type in the ML entry program, which you'd then use to enter the hex data shown above. All in all, you'd have to enter well over a dozen pages for RUN Term 128 using this technique.

The third method is also a hex entry technique, but it's a combination of the two described above. It uses Basic Data statements like the first, but has hex data like the second. The data is presented with more information on a line, and looks like this:

```
100 DATA A23456DE45 F02376C5AA E3F7
```

As you can see, this looks somewhat more cryptic, but has the advantage of being the most condensed form (in the case of RUN Term 128, it's a little over seven pages). It can also be used with *RUN*'s Checksum program.

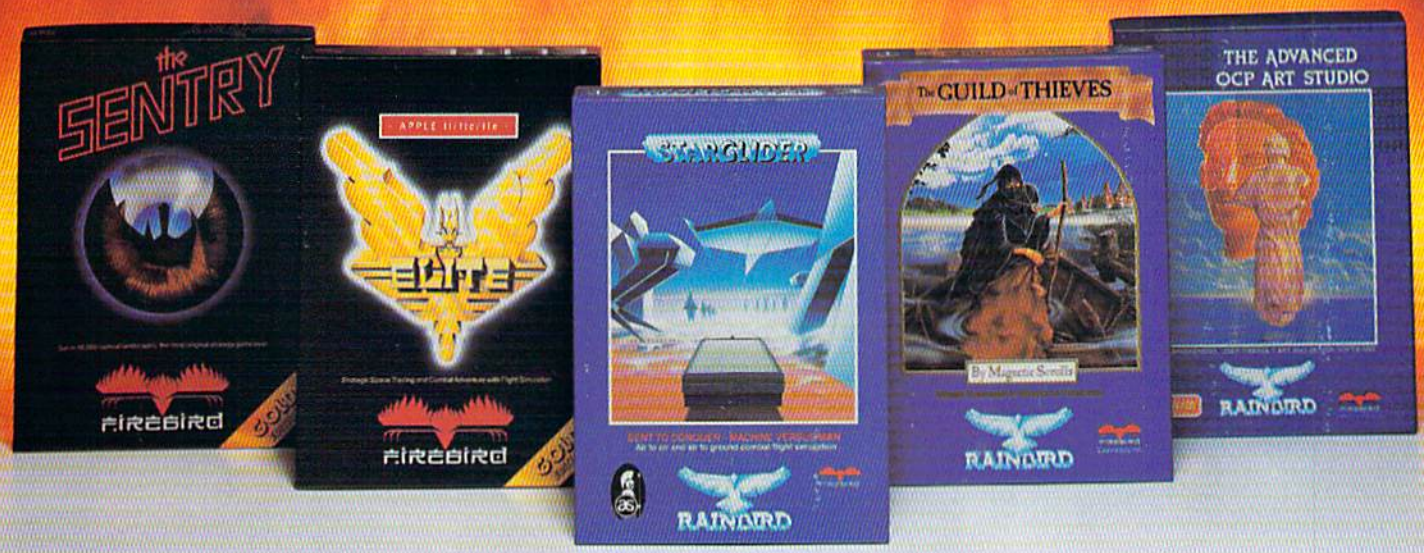
After a great deal of discussion, testing and measuring, we opted to use this last method for these long, machine language programs. There are two advantages for you, the reader. One, you type in fewer lines; two, it frees up pages for other programs and articles, so we can bring you more per issue.

In discussing the various merits of the different techniques, we questioned whether readers want these very powerful, commercial-quality programs (RUN Term 128, RUN Script, and so on) that require a lot of typing, or would prefer several smaller programs instead? Obviously, the programs that offer the most contain the longest listings.

We'll be bringing you some super 64/128 programs in the coming year. Let us know the kinds of programs you prefer and how you want us to format the listings. Send your comments to: *RUN* Editors, 80 Elm St., Peterborough, NH 03458.

**—*RUN* Editors**

# FEEL THE HEAT




No matter what kind of game you're in the mood for, you'll find that if it's in a box marked FIREBIRD, it's really hot!

Firebird offers the excitement of a whole range of challenges — Adventures and Strategies for long rainy weekends, Arcade games for exhilarating evenings, Simulations when you need to get away from it all, Productivity software when you're feeling — well, productive.

Look for the Firebird — it stands for top-quality software in virtually *every* category.

## How About This Ball of Fire From Firebird!

This is SENTRY, a unique Strategy game with over 10,000 full-color 3D vector landscapes and four-way scrolling. Do you have truly exceptional concentration and near perfect hand/eye coordination? Then maybe — just maybe — you possess the skill to outwit the Sentry at each level of the extraordinary challenge.

## Firebird Fireworks Unlimited

When your mood shifts from the deliberation of strategic planning to the excitement of fast-paced Arcade action, look for Firebird's ELITE, a unique game which encompasses the best of both worlds. Or try STARGLIDER, an amazing 3D combat flight simulation.

If it's Adventure you're after, here's the breathtakingly illustrated GUILD OF THIEVES, with its revolutionary text-handling system.

Firebird even offers economical, professional-quality Productivity software! ADVANCED ART STUDIO is a comprehensive art package with powerful graphics routines.

This is Firebird — the best in interactive software of every description. We'll prove to you that you don't have to keep switching brands to satisfy your obsession for challenge!

**CREDIT CARD HOTLINE**
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FIREBIRD

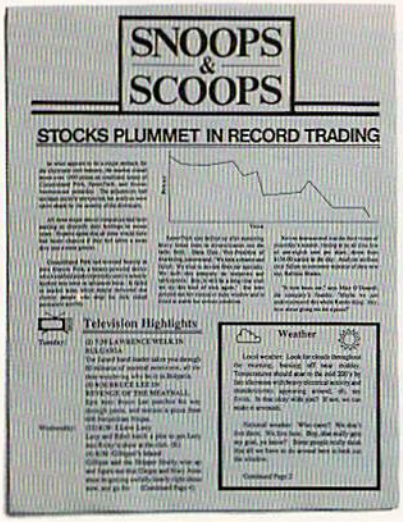
"The First Full Line In Software"

Firebird Licensees, Inc.
P.O. Box 49, Ramsey, NJ 07446
(201) 444-5700

Firebird software for Commodore 64 systems, including the popular Golden Path, Pawn, Colossus Chess IV, Cholo, Talking Teacher, Concise Music System and Advanced Music System, is available from $24.95 to $59.95.

Commodore 64 is a registered trademark of Commodore Business Machines, Inc. Firebird, and the Firebird logo are registered trademarks of Firebird Licensees, Inc.

# WE JUS
# FRONT PA



SNOOPS & SCOOPS

STOCKS PLUMMET IN RECORD TRADING

Television Highlights

Weather

ED'S WEEKLY

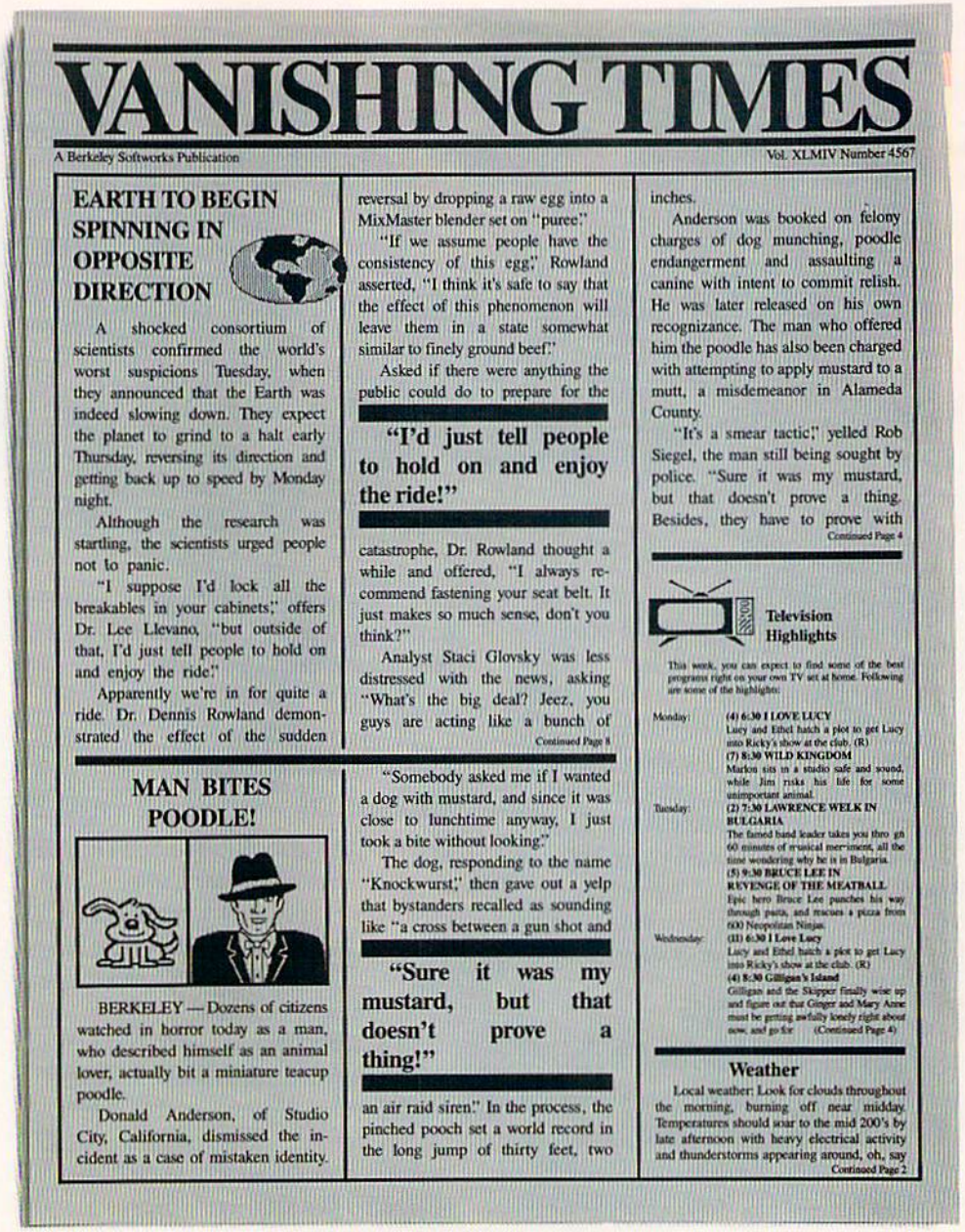
The views and news of Ed.

December 3

Basquing In The Beauty of Andorra

Weather

More people reading stuff like this!



VANISHING TIMES

A Berkeley Softworks Publication

Vol. XLMIV Number 4567

EARTH TO BEGIN SPINNING IN OPPOSITE DIRECTION

A shocked consortium of scientists confirmed the world's worst suspicions Tuesday, when they announced that the Earth was indeed slowing down. They expect the planet to grind to a halt early Thursday, reversing its direction and getting back up to speed by Monday night.

Although the research was startling, the scientists urged people not to panic.

"I suppose I'd lock all the breakables in your cabinets," offers Dr. Lee Llevano, "but outside of that, I'd just tell people to hold on and enjoy the ride."

Apparently we're in for quite a ride. Dr. Dennis Rowland demonstrated the effect of the sudden reversal by dropping a raw egg into a MixMaster blender set on "puree."

"If we assume people have the consistency of this egg," Rowland asserted, "I think it's safe to say that the effect of this phenomenon will leave them in a state somewhat similar to finely ground beef."

Asked if there were anything the public could do to prepare for the catastrophe, Dr. Rowland thought a while and offered, "I always recommend fastening your seat belt. It just makes so much sense, don't you think?"

**"I'd just tell people to hold on and enjoy the ride!"**

Analyst Staci Glovsky was less distressed with the news, asking "What's the big deal? Jeez, you guys are acting like a bunch of

Continued Page 8

MAN BITES POODLE!

BERKELEY — Dozens of citizens watched in horror today as a man, who described himself as an animal lover, actually bit a miniature teacup poodle.

Donald Anderson, of Studio City, California, dismissed the incident as a case of mistaken identity. "Somebody asked me if I wanted a dog with mustard, and since it was close to lunchtime anyway, I just took a bite without looking."

The dog, responding to the name "Knockwurst," then gave out a yelp that bystanders recalled as sounding like "a cross between a gun shot and an air raid siren." In the process, the pinched pooch set a world record in the long jump of thirty feet, two inches.

**"Sure it was my mustard, but that doesn't prove a thing!"**

Anderson was booked on felony charges of dog munching, poodle endangerment and assaulting a canine with intent to commit relish. He was later released on his own recognizance. The man who offered him the poodle has also been charged with attempting to apply mustard to a mutt, a misdemeanor in Alameda County.

"It's a smear tactic!" yelled Rob Siegel, the man still being sought by police. "Sure it was my mustard, but that doesn't prove a thing. Besides, they have to prove with

Continued Page 4

Television Highlights

This week, you can expect to find some of the best programs right on your own TV set at home. Following are some of the highlights:

Monday:
(4) 6:30 I LOVE LUCY
Lucy and Ethel hatch a plot to get Lucy into Ricky's show at the club. (R)
(7) 8:30 WILD KINGDOM
Marlon sits in a studio safe and sound, while Jim risks his life for some unimportant animal.

Tuesday:
(2) 7:30 LAWRENCE WELK IN BULGARIA
The famed band leader takes you thro gh 60 minutes of musical merriment, all the time wondering why he is in Bulgaria.
(5) 9:30 BRUCE LEE IN REVENGE OF THE MEATBALL
Epic hero Bruce Lee punches his way through pasta, and rescues a pizza from 600 Neopolitan Ninjas.

Wednesday:
(11) 6:30 I Love Lucy
Lucy and Ethel hatch a plot to get Lucy into Ricky's show at the club. (R)
(4) 8:30 Gilligan's Island
Gilligan and the Skipper finally wise up and figure out that Ginger and Mary Anne must be getting awfully lonely right about now, and go for

(Continued Page 4)

Weather

Local weather: Look for clouds throughout the morning, burning off near midday. Temperatures should soar to the mid 200's by late afternoon with heavy electrical activity and thunderstorms appearing around, oh, say

Continued Page 2

*Text can be printed in every font available through GEOS. These documents were printed on an Apple Laser Writer*

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Circle 138 on Reader Service card.

# T MADE
# GE NEWS.

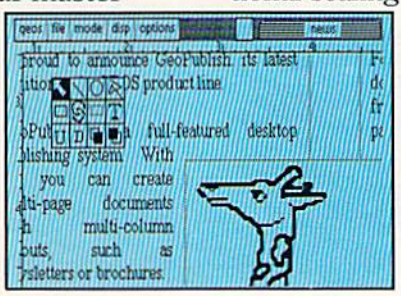
These days, the biggest story in the news is geoPublish. The page-making program for GEOS-equipped 64's and 128's that replaces lifeless layouts with page after page of powerful, punchy professionalism.

### Freedom of the press.

Actually, geoPublish is very patriotic software. After all, what other application guarantees your freedom of self-expression? Well, geoPublish sure does. In fact, every piece it prints is dedicated to the preservation of your personality on paper.

Which means that finally, your newsletters never need to look like anyone else's, ever again.

All you do is draw a bunch of columns for your master layout. They could be two, four or sixteen across the page. They could be short and squat, or long and skinny. It's your call. After that, you just "pour" your geoWrite document, text, graphics and all—into column after column. Page after page.




Everything fills up automatically until it fits firmly into your finely fashioned format.

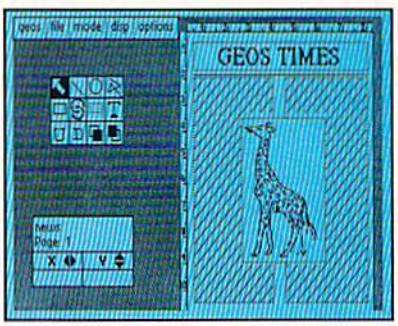
### Extras! Extras! Read all about 'em!

As every editor knows, even the best stories need punching up before they go to press. Which is why geoPublish features an array of artistic appliances designed to earn your pages a place in the history books.

You can resize text. Change fonts. Even insert or delete graphics anywhere on the page. You can lay text over graphics. Graphics over text. Or even wrap text *around* graphics.

And if your image doesn't fit, no problem. The proportional scaling tool can shrink or enlarge any art, be it your original or the stuff you find in Print Shop.™

Finally, those of you intent on making banner headlines should know that geoPublish doesn't wimp out when it comes to headlines. It screams them out, with genuine, newspaper-sized, 96 point megafonts.




Now, if you think that sounds terrific on paper, just wait until you see it printed out on a Laser-Writer.™

### We've saved the best news for last.

And now, for the best part: you can create and save not one, but hundreds of layouts for later use.

And because it's part of the GEOS family, you can fully integrate text and graphics from all your other programs into every geoPublish piece you print.

So now that you know the latest scoop in software, why not subscribe to geoPublish yourself? Who knows? With stuff like this, you could be making front page news in no time.

*To order call 1-800-443-0100 ext. 234*

**geoPublish $69.95**

(California residents add 7% sales tax.)

$2.50 US/$5.50 Foreign for shipping and handling. Allow six weeks for delivery.

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**GEOPUBLISH**

GEOS COMPATIBLE

Berkeley Softworks

The brightest minds are working at Berkeley.

# SCIENTISTS A
# STOP THE AGI

Time passes. Things get old. Let's face it, even Willie Mays retired. So there's no way your Commodore can compete with a newer machine, right?

Wrong.

The fact is that there's actually more power in your Commodore 64 or 128 than when you bought it. All you need is GEOS or GEOS 128 to find it.

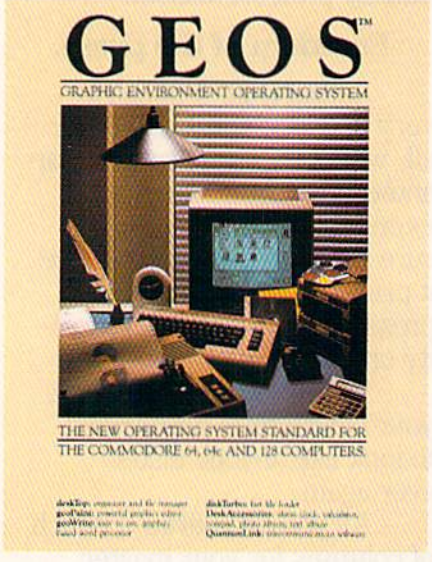
GEOS is the revolutionary operating system that works your hardware up to seven times harder than it's ever worked before. Loading. Processing. Accessing information. All at the mere touch of a mouse or joystick.

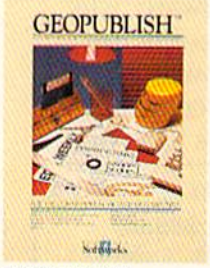
## Time Warps Discovered

With GEOS, everything speeds up. Including you. Because the system is incredibly fast and ridiculously easy to learn: GEOS shows you options, you point at what you want and click your mouse.

End of lesson.

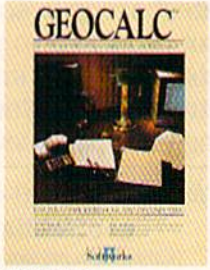
Now, once you know that, you know how every other GEOS application works, too. Like geoWrite, which lets you punch up paragraphs with five different fonts. Or geoPaint, which dresses up diagrams with an arsenal of artistic appliances. Both are built right into the GEOS disk. And when you put them together with geoWrite Workshop's LaserWriter compatibility, every new GEOS document comes out looking like an old master.


GEOS™
GRAPHIC ENVIRONMENT OPERATING SYSTEM
THE NEW OPERATING SYSTEM STANDARD FOR
THE COMMODORE 64, 64c AND 128 COMPUTERS.



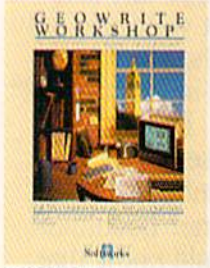

**GEOPUBLISH**

**NEW** The desktop publishing program that lets you design formats, column widths and page layouts. Accepts any geoWrite text and converts non-GEOS text. Wraps text around graphics automatically. Headline fonts up to 192 pt. Complete graphics toolbox.



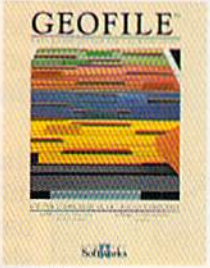

**GEOCALC**

The GEOS-compatible, number-crunching spreadsheet for tracking and analyzing numerical data. Create your own formulas, perform calculations for anything from simple geometry to "what if" cost projections.



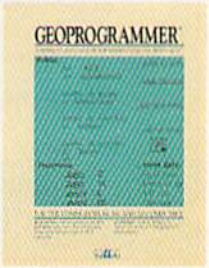

**GEOWRITE WORKSHOP**

**NEW** All the GEOS-compatible tools a writer needs, including new geoWrite 2.1 with headers, footers, margins to 8" and features to justify, center, search and replace text. Includes a Text Grabber (for converting text from programs like Paper Clip), geoMerge and LaserWriter printing capability.



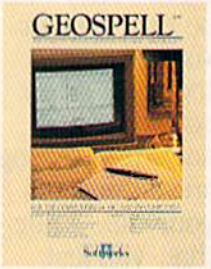

**GEOFILE**

The GEOS-compatible database manager that sorts, edits and prioritizes whatever data you feed it. You fill out the "input form," specify your command, and geoFile takes it from there.




**GEOPROGRAMMER**

**NEW** A programmer's dream for writing your own programs or supercharging someone else's. With easy yet mind-boggling features like graphics that insert by simply cutting and pasting directly from geoPaint. Comes with geoAssembler, geoLink and geoDebugger for modular assembly and testing.




**GEOSPELL**

**NEW** Over 28,000 word geoDictionary for checking spelling. Lets you add words, switch dictionaries, edit, and automatically search and replace. Customize and create fonts up to 48 pt. with geoFont.

Circle 140 on Reader Service card.

# AT BERKELEY NG PROCESS!

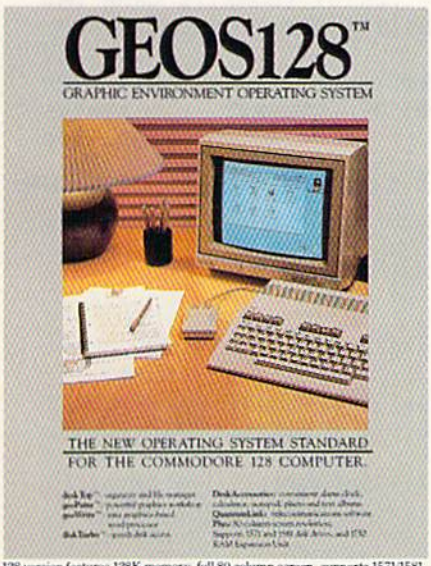
## Avoid Old Age Forever!

But how does all this affect your Commodore's future? Well, it means you don't ever have to worry about it becoming obsolete, because there are all kinds of GEOS applications for almost every purpose.

You can finally get organized with geoFile, the database that searches, finds and lists almost anything that you want to search, find and list. You can manipulate mathematics or figure out financial formulas with geoCalc. If writing's your style, geoWrite Workshop can help you hammer out any kind of report. And geoPublish is the desktop publishing program that is still making headlines throughout the entire industry.

Of course, that's merely a sampling of what the GEOS environment has to offer. Because even as you read this, legions of our engineers are hard at work, developing even more GEOS applications for even more uses.

All of which means you get a whole lot more out of your Commodore than you ever bargained for. And while that may not actually keep your Commodore from getting older, that's certainly something it could live with for a long, long time.



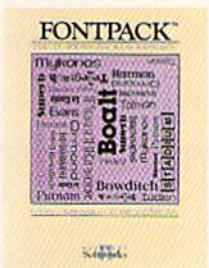

128 version features 128K memory, full 80 column screen, supports 1571/1581 disk drives. 1750 RAM expansion and runs at a full 2 MHz for lightning speed.

Berkeley Softworks

The brightest minds are working at Berkeley.

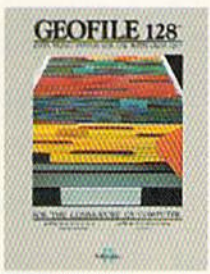
**DESKPACK**

NEW Six GEOS-compatible applications: Graphics Grabber for importing art from Print Shop,™ Newsroom™ and Print Master™ graphics; Calendar; Icon Editor and Black Jack Dealer. Now includes geoDex, the GEOS-compatible directory that allows you to create lists by name, address, phone number, and geoMerge to customize form letters and invitations. In either 40 or 80 col. mode.




**FONTPACK**

A collection of even more fonts for use with GEOS applications, in various shapes and sizes for more expressive and creative documents. Includes font editor. In either 40 or 80 column mode.

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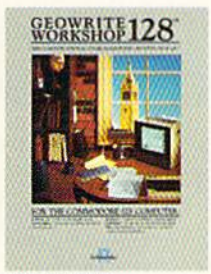


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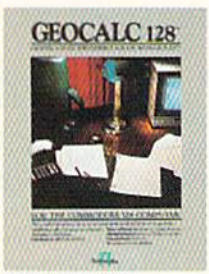


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Circle 140 on Reader Service card.

# MAGIC

*Drive a hot race car down a zig-zag track; rename disks to clear the screen when the directory is listed; add over 2K of additional RAM to Basic 7.0.*

Compiled by TIM WALSH

## $45A *FRERE JACQUES*

Wouldn't you love to attend an evening *soiree* in Paris? Or maybe catch a *bain de soleil* on the French Riviera? Close your eyes and play my program a few times on your C-128 for an uplifting French experience. *Merci!*

```
Ø REM FRERE JACQUES - JIM WALLACE :REM*231
1Ø TEMPO 11                       :REM*1Ø7
2Ø PLAY"V1Ø5T5"                    :REM*61
3Ø A$="QCDECCDECEFHGQEFHG          :REM*28
4Ø B$="IGAGFQECIGAGFQEC"           :REM*73
5Ø C$="QCØ4GØ5HCQCØ4GØ5HC"         :REM*89
6Ø PLAY A$+B$+C$                  :REM*147
```

—JIM WALLACE, TOMS RIVER, NJ

## $45C C-64 SLIDING MESSAGE

If you'd like to jazz up your programs a little, use my short routine, called Sliding Message. It will spice up any program introduction, error message or other display.

Place your message in line 10 of the program, and use line 30 to change the filler character. Adjust the delay (default = 50) and see what happens. To slide the message once, delete line 70.

```
Ø REM SLIDING MESSGE - JOHN GOTTS :REM*149
1Ø A$="ANY MESSAGE UP TO 39 CHARACTERS!"
                                  :REM*179
2Ø A=LEN(A$):DIMB$(39):PRINT"{SHFT CLR}"
                                    :REM*4
3Ø FORT=1TO39-A:A$=" "+A$:NEXT:A=39:REM*49
4Ø FORT=1TOA:B$(T)=MID$(A$,T,1):NEXT
                                   :REM*41
5Ø FORT=ATO1STEP-1:PRINT"{HOME}{5 CRSR DNs
   }{SHFT INST}"B$(T):FORX=1TO5Ø:NEXT:NEXT
                                   :REM*37
6Ø FORT=1TOA:PRINT"{HOME}{5 CRSR DNs} ";CH
   R$(2Ø):FORX=1TO5Ø:NEXT:NEXT     :REM*65
7Ø GOTO5Ø                         :REM*2ØØ
```

—JOHN E. GOTTS, STERLING HEIGHTS, MI►

# TRICK OF THE MONTH

## $45B C-64 ROAD RACER

If you liked River Run (September 1987), then you'll love C-64 Road Racer. Your car is a sprite (could it be an Austin Healy sprite?) that you pilot down a winding race course, using the H (to turn left) and J (to turn right) keys. Every marker you pass adds one point to your score.

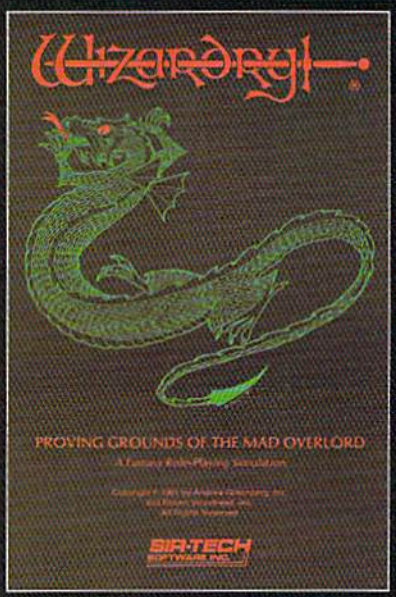
So challenge your reflexes with some intense driving. If your racing skills already approach those of Formula-One caliber, decrease the course width (variable W).

```
Ø REM C-64 ROAD RACER - J. R. CHARNETSKI
                                    :REM*7
1Ø DATA 24Ø,Ø,15,243,255,2Ø7,243,255,2Ø7,2
   55,6Ø,255,243,9Ø,2Ø7,243,1Ø2,2Ø7,243
                                   :REM*65
2Ø DATA 126,2Ø7,3,126,192,3,6Ø,192,3,255,1
   92,3,255,192,3,Ø,192,3,Ø,192,3,Ø,192
                                  :REM*192
3Ø DATA243,Ø,2Ø7,243,129,2Ø7,243,195,2Ø7,2
   55,231,255,241,255,143,24Ø,255,15,24Ø
                                  :REM*25Ø
4Ø V=53248:FORU=832TO894:READN:POKEU,N:NEX
   T                               :REM*174
5Ø POKEV+32,Ø:POKEV+33,Ø:DATA 126,15,Ø
                                  :REM*245
6Ø W=1Ø:R=54296:I=7:J=12:L=1986:M=8:MK=81:
   B=198:S=1-J:X=14Ø:POKE2Ø4Ø,13:POKEV,X
                                  :REM*117
7Ø POKE646,INT(RND(1)*J+2):PRINT"{SHFT CLR
   }ROAD RACER (-H J-) PRESS ANY KEY":POKE
   B,Ø                            :REM*135
8Ø WAITB,1:POKEV+1,139:POKEV+39,1:POKEV+21
   ,1:P=PEEK(V+31):FORD=1TO23:PRINT:NEXT
                                  :REM*2Ø7
9Ø POKER,J:S=S+1:IFZ=ØTHENI=I+1    :REM*54
1ØØ N=PEEK(197):IFN=29 THEN IFX>6Ø THEN X=
    X-M                           :REM*248
11Ø IF N=34 THEN IFX+M<256 THENX=X+M
                                  :REM*213
12Ø IFI=INT(RND(.)*J+M)ORI>2ØTHEN Z=1-Z
                                  :REM*197
13Ø POKEV,X:IFZTHENI=I-1:IF I<3THENZ=.
                                   :REM*85
14Ø POKER,Ø:POKEL+I,MK:POKEL+I+W+1,MK:PRIN
   T                              :REM*126
15Ø ON-(PEEK(V+31)=.)GOTO9Ø:POKEV+21,Ø
                                  :REM*166
16Ø PRINT"{SHFT CLR}SCORE="S:PRINT"{CRSR D
   N}TRY AGAIN Y/N?":POKEB,Ø:WAITB,1:GETA
   $:IFA$="Y"THEN6Ø               :REM*21Ø
```

—JOSEPH CHARNETSKI, DALLAS, PA

Circle 133 on Reader Service card.

# Wizardry®

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## $45D KEYPRESS DETECTOR

Mention the number 653 to most C-64 programmers, and they immediately think, "wait," because a program's execution can be stopped by entering the WAIT 653,1 command.

I wrote a short program that reacts to the control, Commodore and shift keys—the keys that affect location 653. By using the logic in my Magic program, you can write routines that halt program execution until two or more keys are pressed simultaneously.

```
Ø REM KEYPRESS DETECTOR - T. WALSH:REM*192
1Ø PRINT"{SHFT CLR}":R=PEEK(653)  :REM*115
2Ø A$="{CTRL 2}SHIFT":B$="{CTRL 8}COMMODOR
   E":C$="{CTRL 1}CONTROL":D$="{CTRL 4}/":
   E$="."                              :REM*244
3Ø F$="{HOME}{COMD 7}YOU'RE PRESSING "
                                       :REM*69
4Ø IF R=Ø THEN 13Ø                    :REM*112
5Ø IF R=1 THEN 12Ø                    :REM*137
6Ø IF R=2 THEN A$=B$                   :REM*75
7Ø IF R=3 THEN A$=A$+D$+B$             :REM*54
8Ø IF R=4 THEN A$=C$                  :REM*11Ø
9Ø IF R=5 THEN A$=A$+D$+C$            :REM*1Ø7
1ØØ IF R=6 THEN A$=B$+D$+C$           :REM*116
11Ø IF R=7 THEN A$=A$+D$+B$+D$+C$     :REM*185
12Ø PRINT F$+A$+E$:GOTO 1Ø            :REM*216
13Ø RUN                                :REM*13
```

—TIM WALSH, *RUN* STAFF

## $45E CLEAR SCREEN DIRECTORY

After renaming a disk using the trick below, the screen automatically clears whenever you list the disk directory to the screen. In its present form, the program requires that the disk be formatted beforehand, but the technique I use is outlined in line 50, and it can be applied to format a disk, as well.

```
Ø REM CLEAR SCREEN DIRECTORY - CHARLES JON
  ES                                   :REM*215
1Ø INPUT"{SHFT CLR}NAME OF DISK:";DN$
                                       :REM*169
2Ø PRINT"PLACE A FORMATTED WORK DISK IN DR
   IVE"                                :REM*45
3Ø PRINT"AND PRESS RETURN..."         :REM*1Ø7
4Ø GET A$:IF A$="" THEN 4Ø            :REM*224
5Ø OPEN15,8,15,"N:"+CHR$(13)+"{SHFT CLR}"+
   DN$                                 :REM*199
6Ø CLOSE15                             :REM*22Ø
7Ø PRINT"{SHFT CLR} CLEAR SCREEN DIRECTORY
    INSTALLED!"                        :REM*231
```

—CHARLES JONES, CARRIERE, MS

## $45F LABAR'S LAMENT

Commodore 128 users still comtemplating Thomas Smith's C-128 Engineering Disaster (trick $404, August 1987) might lapse into an altered state of consciousness over my elementary engineering enigma. So, why while winter away waiting? Don't linger any longer—lapse into LaBar's Latest Lament.

```
Ø REM LABAR'S LAMENT - SI LABAR     :REM*61
1Ø GRAPHIC1,1:DRAW 1,24Ø, 75 TO 24Ø, 15Ø T
   O 8Ø, 15Ø TO 8Ø, 75 TO 275, 75 TO 275,
   17Ø TO 15, 17Ø TO 15, 2Ø TO 28Ø, 2Ø TO
   31Ø,45 TO 31Ø, 19Ø TO 4Ø, 19Ø TO 15,17Ø
                                  :REM*251
2Ø DRAW 1, 31Ø, 45 TO 5Ø, 45 TO 5Ø, 15Ø TO
    8Ø, 15Ø:DRAW 1, 275, 17Ø TO 245,15Ø:DR
   AW 1, 8Ø, 75 TO 5Ø,45:COLOR1,16:PAINT 1
   , 16Ø,1ØØ:PAINT 1,1Ø,1Ø:SLEEP5 :REM*187
3Ø GRAPHICØ:PRINT"{SHFT CLR}PRESS A KEY TO
    TOGGLE BETWEEN SCREENS"          :REM*4
4Ø GETKEYA$:GRAPHIC1               :REM*176
5Ø GETKEYA$: GOTO 3Ø                :REM*94
```

—SI LABAR, BETHLEHEM, PA

## $460 EXTRA! EXTRA! 2300 BYTES EXTRA!

Attention C-128 programmers! When you're writing Basic programs and don't need the 40-column graphics of your C-128, type in this line to get an extra 2300 bytes of Basic RAM:

```
POKE 45,1:POKE 46,19:POKE 4864,0:NEW
```

—HOWARD LEW, SAN FRANCISCO, CA

## $461 DOS 5.1 WEDGE QUICKSAVE

Nearly all C-64 users like to keep a copy of Commodore's DOS wedge on their work disks. After all, it simplifies long, complicated disk commands into one- or two-character commands. Unfortunately, since the DOS wedge is pure machine language, it isn't easily copied to disk without special techniques. Until now.

My utility, called DOS 5.1 Quicksave, quickly copies the wedge to any disk. First, load the wedge as usual, then type in DOS 5.1 Quicksave. Now insert the formatted disk you want to place the wedge on into your drive and run the program. Presto! DOS 5.1 is on the disk!

```
Ø REM COPY DOS WEDGE - THOMAS B. SMITH
                                       :REM*1Ø8
1Ø OPEN8,8,8,"DOS 5.1":POKE251,Ø:POKE252,2
   Ø4:POKE78Ø,251:POKE781,9Ø:POKE782,2Ø7
                                       :REM*113
2Ø SYS 65496                           :REM*234
```

—THOMAS B. SMITH, GALLIPOLIS, OH

## $462 C-128 EXPLOSIVE ENDING

Dramatic sound effects can enhance almost any game. My routine makes all three voices on the C-128 rise in pitch until only one is left, followed by a powerful explosion that rocks the 40-column screen. Don't fret—everything returns to normal after the explosion.

```
Ø REM C-128 EXPLOSIVE END - JOHN KUHNE
                                       :REM*59
1Ø SOUND 1,45ØØØ,2ØØØ,Ø,1,3,Ø        :REM*1Ø2
2Ø SOUND 2,45ØØØ,15ØØ,Ø,1,1Ø,Ø        :REM*83
3Ø SOUND 3,45ØØØ,1ØØØ,Ø,1,15,Ø       :REM*154
4Ø SOUND 1,195Ø,1ØØ,1,1,25,3         :REM*1Ø4
5Ø SOUND 2,295Ø,1ØØ,1,1,15,3          :REM*23
6Ø SOUND 3,95Ø,1ØØ,1,1,1Ø,3           :REM*12
7Ø FORK=1 TO 4:FORJ=1TO42:POKE5327Ø,J:NEXT
   J:NEXTK                             :REM*65
```

—JOHN KUHNE, NEWMARKET, ONTARIO, CANADA

*Continued on p. 113.*

Circle 217 on Reader Service card.

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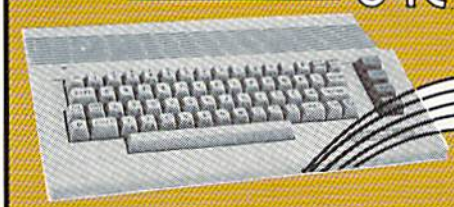

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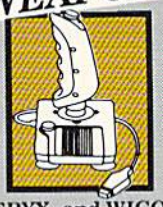

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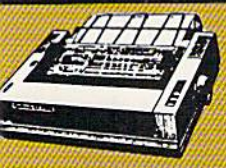

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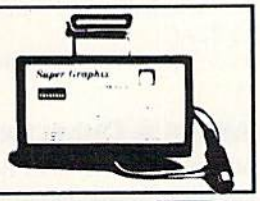

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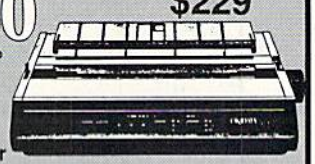

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11/87

# News and New Products

*Meet Max Toy, Commodore's new president and CEO; make bright-yellow, rear-window car signs with your C-64; fly your plane to the rim of Niagara Falls.*

Compiled by HAROLD R. BJORNSEN

## Gunship Medal of Honor

HUNT VALLEY, MD—Larry Woodworth, a 27-year-old electronics technician from Syracuse, New York, is the first winner of the Congressional Medal of Honor in MicroProse Software's Gunship helicopter simulation and an honorary member of the Gunship Design Team.

"I feel like a little kid at Christmas," he said. "I didn't expect this kind of recognition when I won the medal. In fact, I didn't realize until recently that I was the first to do it." Woodworth works on military fire-control computers for General Electric Corp.

The Congressional Medal of Honor is the highest achievement in the Gunship simulation of an Apache AH-64A attack helicopter. Players are awarded military decorations and receive promotions in rank based on their performance on missions in South Vietnam, Central America and Western Europe.

## RUN Reader On Board

WOODHAVEN, NY—Zebra Systems (78-06 Jamaica Ave., Woodhaven, NY 11421) has released its Car Sign Designer for the C-64. The program lets you create diamond-shaped car signs on your computer screen before printing out the result on bright-yellow paper, which you then insert into one of two reusable clear plastic sign holders with suction cups included in the package. Available for $29.95.

Check Reader Service number 405.

**Introduce yourself to other drivers with Zebra Systems' Car Sign Designer.**

## Programmer's Challenge

BLUE RIDGE SUMMIT, PA—Tab Books (PO Box 40, Blue Ridge Summit, PA 17214) has released *The Commodore Programmer's Challenge: 50 Challenging Problems to Test Your Programming Skills—with Solutions in Basic, Pascal and C.* Fun is the main objective of the book, but the problems also help computerists polish their programming skills or learn to program in a new language.

The 50 problems are divided equally into ten sets of five problems each. The sets represent different tests, and the five problems in each test are graded according to level of difficulty: the first two are for beginners, the next two for more experienced programmers and the last is very difficult. The 240-page book has 163 illustrations and is available in paperback for the C-64 for $14.60.

Check Reader Service number 401.

## Less Taxing

RANDALLSTOWN, MD—Master Software (6 Hillery Court, Randallstown, MD 21133) has released the 1987 version of its Tax Master, an aid in the preparation of U.S. Federal Income Taxes. The C-64 program covers all the new tax laws and guides you through the preparation of Forms 1040 and 4562 and Schedules A–F. It performs all calculations, figures your tax automatically, and even transfers results from one form to another. The tax tables are included. Available for $30.

Check Reader Service number 403.

## The Game in Spain

CAMBRIDGE—Ticket to Spain, the new title in the software travelogue series from Blue Lion Software (90 Sherman St., Cambridge, MA 02140), is available for the C-64. In this program, you travel through Spain in search of a family heirloom. With a limited budget and a series of tasks to fulfill, you set out on a quest that takes you to various cities and towns, such as Seville, Madrid, Toledo, Granada and Barcelona. You'll explore historical landmarks, converse with the locals, attend a bullfight, shop or dine in authentic locales. All the while, you'll learn about Spanish culture and language, history, geography and contemporary life. A phrasebook is included in the package to help you with the most difficult situations. $29.95.

Check Reader Service number 404.

## Outstanding Sales

WASHINGTON, DC—The Software Publishers Association has given awards for outstanding sales in 1987 to the following software packages available for the C-64 and/or C-128 . To qualify, a software package must have sold more than 250,000 copies for a platinum label, more than 100,000 copies for a gold label and more than 50,000 copies for a silver label.

PLATINUM—

Broderbund's The Print Shop Graphics Library: Disk 1 and Bank Street Writer.

Davidson & Associates' Math Blaster!.

Hi-Tech Expressions' Jingle Disk.

Infocom's The Hitchhiker's Guide to the Galaxy and Zork I.

MicroProse's Silent Service and F-15 Strike Eagle.

GOLD—

Accolade's HardBall!

Activision's Hacker.

Broderbund's Where in the World Is Carmen Sandiego? and The Print Shop Graphics Library: Disk 3.

Cosmi's Super Huey.

Data East USA's Karate Champ, Commando and Tag Team Wrestling.

Electronic Arts' The Bard's Tale and Racing Destruction Set.

Hi-Tech Expressions' CardWare and HeartWare.

Infocom's Leather Goddesses of Phobos.

Micro League Sports Association's Micro League Baseball.

MicroProse's Gunship.

Software Toolworks' Chessmaster 2000.

SILVER—

Accolade's Ace of Aces, Fight Night, Mean 18 and Dam Busters.

Activision's Hacker II: The Doomsday Papers, Championship Baseball, GFL Championship Football, and GBA Championship Basketball: Two-On-Two.

Cosmi's Super Huey II.

Data East USA's Kung Fu Master and Commando.

Davidson & Associates' Spell It!.

Firebird's Elite.

Hi-Tech Expressions' PartyWare.

Infocom's Wishbringer.

## Whistle Music

EUGENE, OR—Voice Master Jr., a micro-size speech digitizer and voice-recognition system for the C-64, lets you record and play back up to 64 words or phrases, in any accent and any language. With the system, your computer can understand up to 32 voice commands, and additional voice commands can be loaded from disk. Another feature, the Voice Harp, lets you create and compose music by whistling into the microphone. Notes corresponding to your whistle-pitch scroll across the screen as you whistle. Available for $39.95 from Covox, 675-D Conger St., Eugene, OR 97402.

Check Reader Service number 402.

## Toy Takes the Helm

WEST CHESTER, PA—Irving Gould, chairman and CEO of Commodore International Limited, has announced that Max Toy will join the company as president and chief operating officer of Commodore Business Machines, the company's U.S. subsidiary.

A computer-industry veteran, Mr. Toy has held management positions at ITT, Compaq and IBM. Says Gould, "Max has over 12 years of personal computer industry experience and has established solid distribution networks and VAR programs. This expertise will complement the progress already made in U.S. operations. . .and in sales and marketing."

## Don't Get too Close

CHAMPAIGN, IL—Scenery Disk 11, a C-64 program for the Flight Simulator II and Jet programs from SubLogic (713 Edgebrook Drive, Champaign, IL 61820), covers the central Great Lakes area of the United States. The disk features detailed views of Detroit, with features such as the Ambassador Bridge, Renaissance Center and Tiger Stadium; Pittsburgh, showing skyscrapers and bridges spanning three rivers; and Niagara Falls, where you can actually fly below the rim of the Niagara River canyon right up to the falls. To eliminate the monotony of flying between cities, a new default ground pattern simulating fields and other areas of varying color has been added. It's available for $24.95.

Check Reader Service number 406.

## Jimbo Baby Is Back

NORTHBROOK, IL—And so is the Mad Leader, in Infiltrator II, the helicopter simulator/graphics adventure sequel from Mindscape (3444 Dundee Rd., Northbrook, IL 60062). As Captain Johnny "Jimbo Baby" McGibbits, you must sharpen your flying skills and file your flight plan, for headquarters has assigned you to *the* mission—to stop the evil Mad Leader from dominating the world. It's available for the C-64 for $34.95.

Check Reader Service number 400.

## Hang 'em High

WESTWOOD, MA—Feed-A-Form holds up to four continuous-feed forms simultaneously for convenient feeding to your printer. The forms feed right from their cartons stored under the printer table. The end of each stock of forms is held in place between two acrylic bars until you feed the desired form into the printer. The aluminum, steel and acrylic feeder measures 18 by 18 by 21 inches and weighs eight pounds. It's available for $89.95 from Feed-A-Form, 29 Dover Terrace, Westwood, MA 02090.

**Feed-A-Form stands ready to feed up to four forms to your form-feeder.**

Check Reader Service number 408.

## Ho, Ho, Ho!

NEW YORK, NY—'Twas the Night Before Christmas, an animated musical holiday disk for the C-64, has been released by Simon and Schuster Software (One Gulf+Western Plaza, New York, NY 10023). The program narrates the classic poem with animation and musical accompaniment.

But Santa has also included other nifty features.

With it, you can send animated and personalized Christmas disks to friends and relatives, type and print letters to Santa (the letter is automatically addressed to the North Pole when printed out), print Christmas cards and play the Christmas game (a computerized jigsaw puzzle). It's available for $8.95 and requires an MPS-801 or -1000 printer or compatible.

Check Reader Service number 409.■

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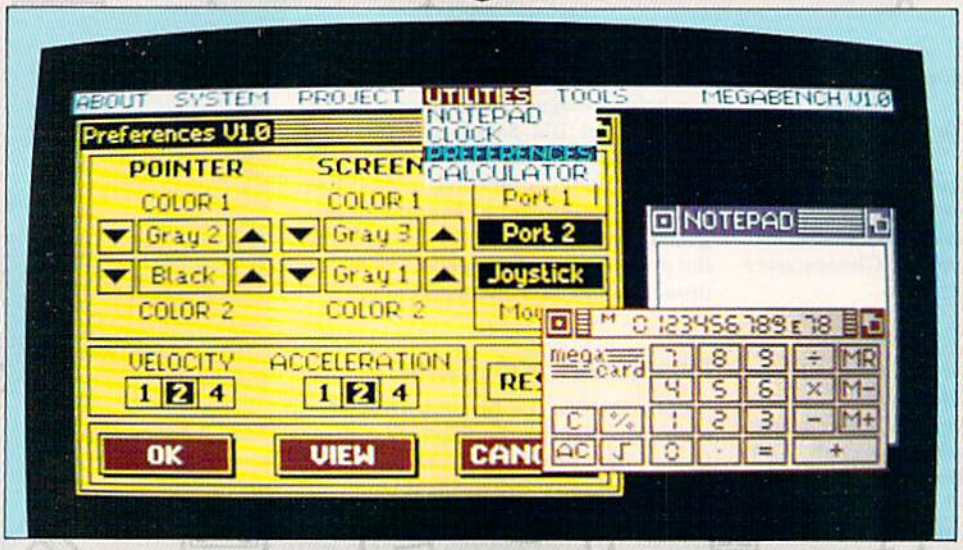
# KEEP IT SIMPLE!

NEW FROM HOLLAND




NEW FROM HOLLAND

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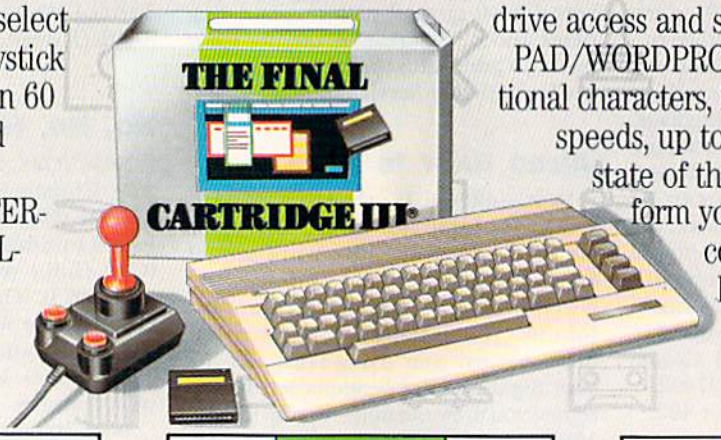
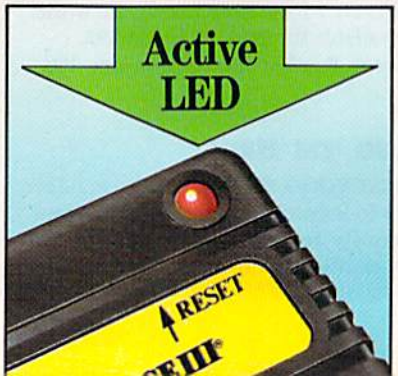
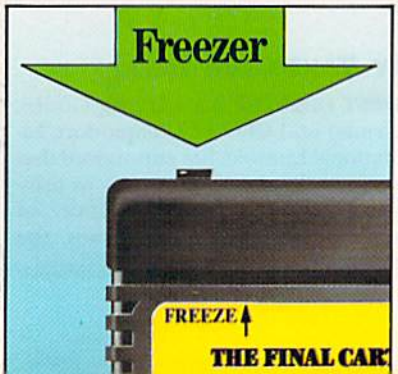



Comfortable ML MONITOR including 1541 drive access and sprite-editing, a NOTEPAD/WORDPROCESSOR with proportional characters, 2 DISKLOADERS with speeds, up to 15 times faster and a state of the art FREEZER. Transform your Commodore into a complete new - AMIGA LOOK ALIKE - system.



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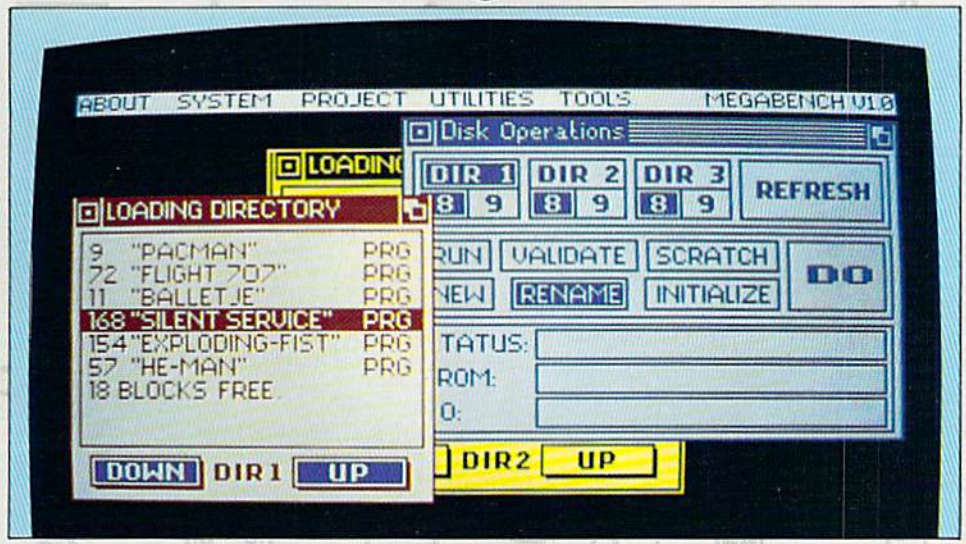
# WINDOWS




# THE FINAL CARTRIDGE III®

The high-resolution bit mapped windows are selected from a menu bar. An unlimited number of windows can be open on the screen at the same time. The windows can be freely moved on the screen. The following windows are already implemented in ROM:

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CALCULATOR
Complete simulation of a LCD-calculator. Input either with mouse, joystick or keyboard. The numeric key-pad of the C128 can be used in C64-mode.

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DIRECTORY WINDOWS
Enables you to open directories from different disks and drives, sort and print directories.

DISK WINDOWS
Load, Run, Rename, Validate, Scratch, Initialize, Fast format disks.

TAPE WINDOW
Activates fast and normal modes.

PRINTER WINDOWS
Select different printers, such as Commodore serial, Centronics, RS 232, Color printers.

REQUESTER WINDOWS

DISK BASED USER WINDOWS
Design your own windows.

CLOCK
Real Time Clock, with Alarm.

Circle 150 on Reader Service card.

# PULL DOWN MENU

# THE FINAL CARTRIDGE III®

Almost all commands and functions that are not activated by windows can be selected from a menu bar, which appears on top of the screen after pressing the fire button, either in Basic or from the freezer. The following Basic Toolkit and keyboard extra's are included:

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1) In 64 mode only. Colors simulated, specifications may change without notice.

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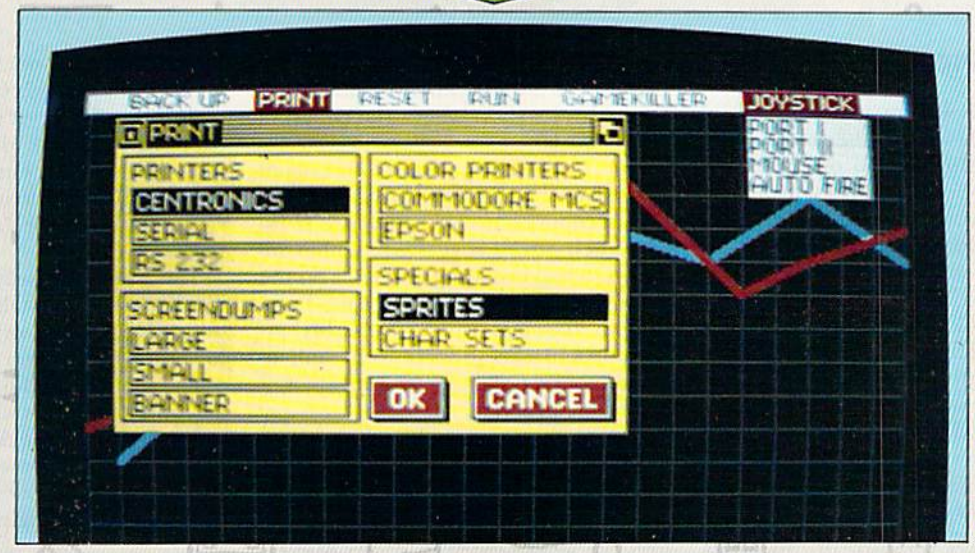
# FREEZER MENU




# THE FINAL CARTRIDGE III®

Innovative hardware, combined with smart software, allow you to freeze and continue every well-known C64-program. Freezer options include:

CENTRONICS/SERIAL/RS 232 SCREENDUMPS
• Full A4 printing • Variable printsize • Color printing • Sprite printing • Reverse printing • Color changes.

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• Kills sprite to sprite • and/or sprite to background collision
• Can be started at any point in your game.

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• Transforms a normal joystick to an advanced auto fire engine.

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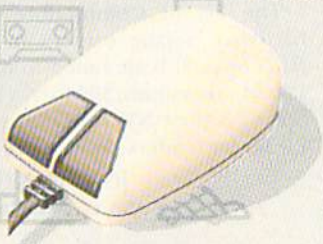

ML MONITOR

Comfortable ML monitor. Does not reside in memory. Functions include:
• Scrolling up and down • 64K ROM/RAM access • Sprite editor • Character editor • Drive monitor • Fast loading and saving • Printer driver.

# MAIL RUN

*This month's letters feature reports on software, an rf shielding technique and screen magnifiers.*

## THE BIG PICTURE

I may have help for Catherine Firmin, who wrote in last November's Mail RUN about her difficulties in using a computer and her hope to find a screen magnifier. Independent Living Aids, Inc., of 27 East Mall, Plainview, NY 11803; 516-752-8080, offers a product called the Beamscope, a large rectangular lens made of acrylic and mounted on legs that, placed in front of a TV screen, magnifies it more than 50 percent. The blurb in the catalog says the Beamscope "provides exceptional color, brightness and clarity." There's a version for 10- to 15-inch screens ($57.95) and one for 17- to 23-inch screens ($67.95).

—JAMES M. MOSHER
TOPEKA, KS

*Thanks for the tip! Such magnifiers were fairly common in the early days of television, when screens were very small.*

*Another reader, Amzi Warren of Proctor, Vermont, sent information on a very similar product called the Super Screen. Listed in Dr. Leonard's Health Care Catalog, the Super Screen accommodates 16- to 21-inch TVs and costs $29.95. Contact Dr. Leonard's at 74-20th St., Brooklyn, NY 11232 or call 718-768-0010.*

*Deborah A. Randall of Auburn, Maine, wrote to report that a support organization for handicapped persons called the Job Accommodation Network in Morgantown, West Virginia, had information about another screen magnifier. We spoke with Karl Marion of JAN who said the name of the magnifier is Compulenz, and it's available from International Marketing Services in Florida. Their phone number is 813-842-3231.*

—EDITORS

## SHIELDED SHELVES

After many months of trying to get Pocket Writer 2 from Digital Solutions to work on my C-128, I've finally succeeded. I believe my problem was their protection scheme, which makes any type of interference whatsoever inhibit the program. In their latest correspondence, after they copied Pocket Writer for me for the third time, they suggested that I move my equipment around until I found a location where the program would work.

Well, I have my hardware all arranged on shelves, so I didn't want to rearrange it to accommodate one program. However, their advice suggested another solution to me: installing rf shields on the shelves to isolate the units. I used aluminum flashing, which is readily accessible and easy to work with, and, attached to the underside of each shelf, it solved the problem.

If necessary, you could achieve even better protection by connecting the shields to each other with wire or strips of the flashing, then using a wire to attach the shield network to the ground receptacle in an ac outlet.

—PAUL P. YANTCHOOK
CHANTILLY, VA

*The ground receptacle is the round third hole in more recent electrical outlets. Make sure you don't connect the shield to one of the rectangular receptacles—they're hot! You could also ground the shield to one of the outlet's faceplate screws. In fact, with an older two-hole outlet, you'd have to use a screw.*

—EDITORS

## ROCKLAND COUNTY REPAIRS

The list of Commodore-authorized hardware repair centers in the 1988 *RUN* Special Issue failed to include Kasara Microsystems, 33 Murray Hill Drive, Spring Valley, NY 10977; 914-356-3131. Please let readers know we're here.

—JOEL H. KORNREICH
KASARA MICROSYSTEMS

*Done—and we're sorry about the omission.*

—EDITORS

## CP/M BOOKKEEPER

An "Editors" note in last October's Mail RUN invited comments from readers about CP/M programs they use. Here's my contribution.

I use a CP/M program called Checks and Balances from CDE Software to monitor my family's expenses and bank accounts, and I'm very pleased with it. It supports two disk drives and 80 columns. Data can be entered in any order; then the Sort command places it in correct sequence for fast retrieval and review.

The Total command calls screens that display account totals by year, quarter or month; cash flow; bills; profit and loss; and transaction types. It also displays missing and duplicate checks. The documentation is clear and supplemented by a sample data disk that I haven't even had to use yet. Checks and Balances is just what I needed in a domestic bookkeeping program.

—BRAHAM LATCH
MONTROSE, CA

*We reviewed CDE's Checks and Balances in our February 1987 Software Gallery. The reviewer, Alex Lane, gave the program excellent marks also. For more information, contact CDE at 948 Tularosa Drive, Los Angeles, CA 90026; 213-661-2031.*

—EDITORS

## ADDED INPUT

I've been using Dome Accounting by Computer for the past six months and find the program easy to work with. However, it has a significant drawback that Walt Latocha didn't mention in his Software Gallery review last October. Nowhere in Great American Software's ads do they mention that the disk can be used for only one year or by one company. After you respond to the prompts on the set-up screen, the program writes the data to disk, then erases the set-up routine. Thus, you can't set up the program for another year or another company without buying another disk. Had I known about this copy-protection scheme, I would never have bought the program.

—LESLIE A. POLLAK
CHOMEDEY, LAVAL
QUEBEC, CANADA ■

# Speed in Spades.

Throttle—*wide* open.
Joystick—back *hard*.

Air it out, man.

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Show 'em who owns the skies.

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*Bail out from a midair mishap, and you never know where you'll end up.*

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**$29.95 suggested retail price for Commodore 64/128.™**
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Circle 23 on Reader Service card.

# SOFTWARE GALLERY

*Start off the new year with reviews of graphics programs, a disk drive utility and warriors of land and sea!*

Compiled by BETH S. JALA

## GUILD OF THIEVES ..... A+

*A Chart-Topper Sequel To The Pawn*

I've lately become skeptical of adventure games because I've seen so many come and go. With my own collection of fantasy/adventure games approaching 100 in number, it's difficult for me to get excited when a new program appears. When I received Firebird's Guild of Thieves, I saw no reason to become optimistic—that is, until I opened the box.

It's not Guild of Thieves' superb and often hilarious documentation that engaged me so, and I've seen better plots on the backs of cereal boxes. The joy of playing Guild of Thieves comes from the excitement of interacting with a program that has been so lovingly and expertly crafted that every aspect of it simply shines.

Welcome to the land of Kerovnia, where you've applied for entrance into the Guild of Thieves, better known as the Worshipful and Partially Honourable Guild of Professional Nocturnal Surreptitious Entry and Removal Operatives. Before you can be admitted into the Guild, you must successfully complete a test that entails plundering a castle and the surrounding countryside, pillaging practically everything that doesn't walk or isn't nailed down. No easy test, to be sure.

Before you begin, you must first read "What Burglar," an old gazette that is supplied with the game. Aimed at the professional thief, the gazette is reminiscent of a seedy club newsletter. In it, you'll find the playing instructions, several humorous news stories, an interview with the Guild's founder, Rhino Q.Q. Thrushwhaker III, classified ads and a useful hints section.

Several interesting props are also included: a Guild contract (suitable for framing), playing die and a plastic credit card.

You move about and communicate with the story by using English words and phrases. The game's powerful parser can understand varied and complex compound sentences, and gives you the ability to converse and interact with a lot of the characters within the story. Additionally, the parser understands many standard abbreviations, such as "L" for look, "I" for inventory, and so on. I was intrigued by how infrequently the program questioned my commands, as if every move was anticipated.

Graphically, Guild of Thieves offers dozens of exciting high-resolution depictions that help guide you along your surreptitious path. You can select an option that displays a full graphic screen the first time a new area is entered, and a small cameo picture on subsequent visits. This cameo is a capsulized version of the full view, displayed out of the way of the main text. Graphics can be scrolled up or down to suit your tastes. With the graphics enabled, you'll be prompted to swap disks quite a bit. Using the function keys, however, you can disable the graphics, thereby reducing disk access and swapping. Perhaps, in future releases, the authors will take into consideration those of us with two disk drives.

To complete the game, you must collect all of the treasures available, while solving the puzzles associated with them. You can resort to the "hint" command for a particularly tough problem, but you might regret your lack of patience for not thinking of the solution yourself.

Guild of Thieves takes a lighthearted and fascinating approach to a tired genre. It's an intriguing, thoughtfully crafted game that doesn't take itself too seriously. If I had to throw away all but one of my own adventure games, Guild of Thieves would be a top contender for the one I would keep. *(Firebird, PO Box 49, Ramsey, NJ 07446. C-64/$39.95.)*

—JOHN RYAN
BILOXI, MS

## MANIAC MANSION ..... A+

*You'll Experience Laughter Fear, Victory, Bewilderment —And Fun!*

It takes a great deal of effort to produce a highly successful piece of entertainment software in today's competitive market. A product must be professionally crafted, innovative, replayable, and seed you with the desire to return to it time and again. These are facets that not all software houses can measure up to, unless of course, you happen to be Lucasfilm, whose release, Maniac Mansion, possesses all of ►

### REPORT CARD

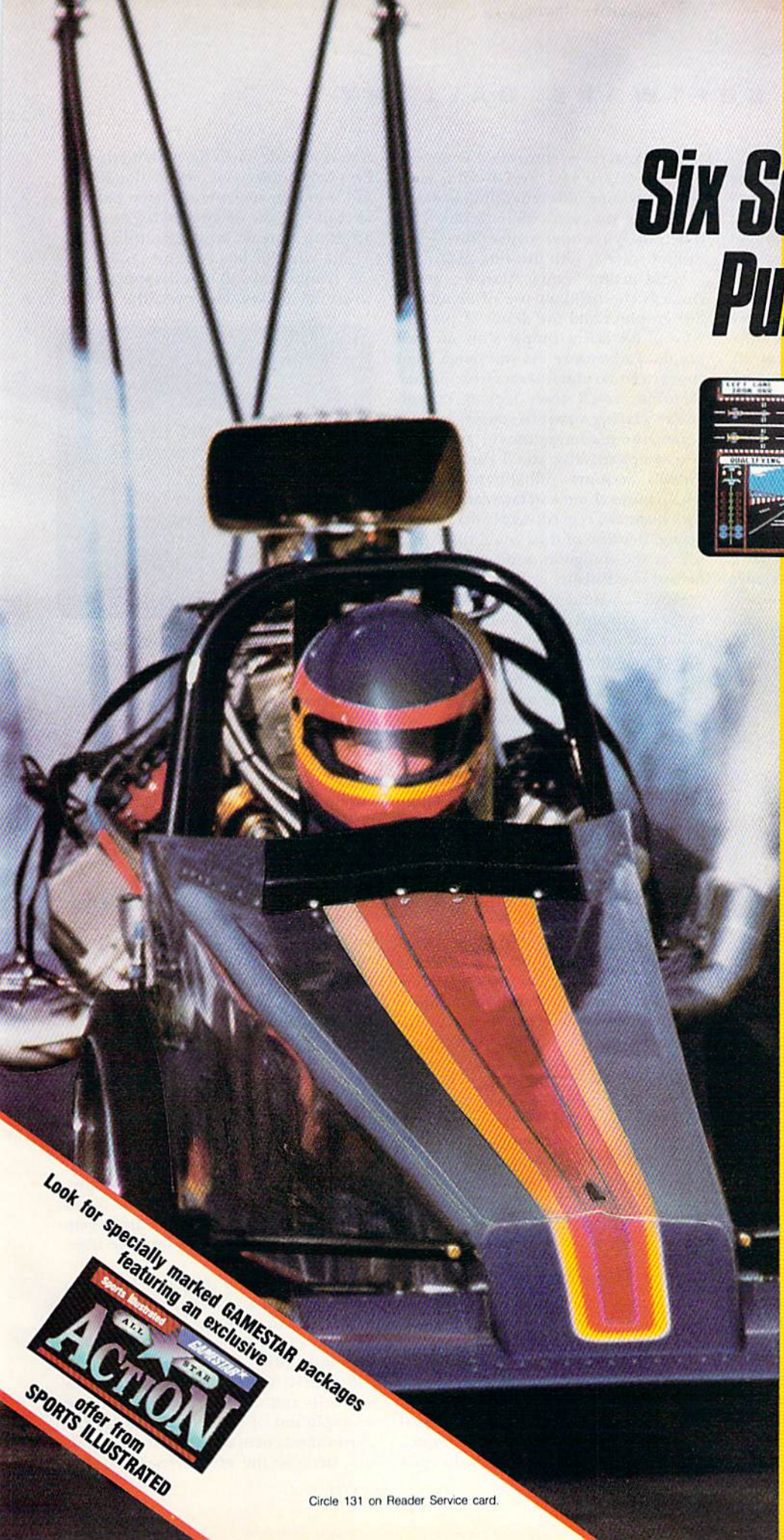
**A Superb!**
An exceptional program that outshines all others.

**B Good.**
One of the better programs available in its category. A worthy addition to your software library.

**C Average.**
Lives up to its billing. No major hassles, headaches or disappointments here.

**D Poor.**
This program has some problems. There are better on the market.

**E Failure.**
Many problems; should be deep-sixed!



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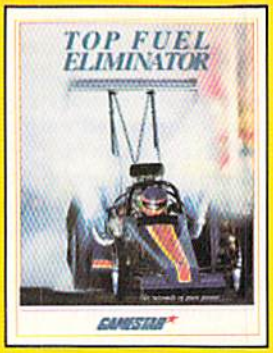


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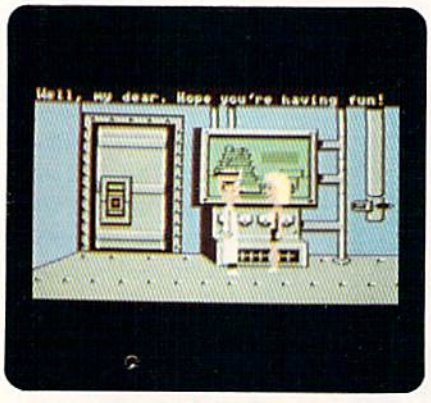
these qualities, and more!

Maniac Mansion could be labeled as a graphic adventure game, although that particular term would do it a great injustice. The program is better thought of as an event, where emotions like triumph, delight, fear and frustration are brought out in full force.

This is a 3-D adventure as you have never experienced before. You are Dave Miller, popular student and local all-American boy-next-door. Your girlfriend, Sandy, has been kidnapped by the dastardly Dr. Fred, a psychopathic scientist who lives in an old mansion on the hill. Dire events are in store for Sandy unless you can save her. To do this, you choose two other teenagers from a pool of seven local boys and girls. You'll find that each teenager possesses special talents that can help or hinder you when you're trying to solve some of the puzzles within the house.




**Maniac Mansion's Doctor Fred insists on threatening Sandy.**

Expect to interact with the house's demented inhabitants—Nurse Edna, an old gal with an oversized libido; Weird Ed, a teenage commando with a thing for hamsters; then there's dead cousin Ted; and let's not forget the dreaded tentacle and . . . oh well, you'll get the point when you play this magical and captivating adventure.

This game is different from all the others of its genre in one important respect—there's no typing involved! Action is controlled entirely by joystick. The screen is divided into three main sections: the command line, the information line and the main graphics screen—your window to the world of Maniac Mansion. Each player is controlled by moving the joystick arrow to a location and clicking the joystick button. Objects displayed on the screen can be picked up, used, pushed, pulled, and so forth, by a simple point-and-click method.

Each player is controlled independently, and, in fact, you'll often have each one doing different things in many of Maniac Mansion's 55 locations. This is definitely a cooperative venture—you cannot solve it with just one player.

What makes Maniac Mansion really shine is the brilliant use of simulated 3-D graphics and the depth of play involved. It's not a simple show-and-tell graphics adventure. As you move from room to room and interact with Maniac Mansion, you'll soon feel as though you're playing a part in some teenager-versus-the-madman movie script. If you're not stealthy, you'll run into the house's eccentric inhabitants, all of whom move about and take care of their own business, regardless of what you're doing! Because of this, you'll find yourself in the dungeon quite a few times before you finish.

However, Maniac Mansion is not one of those cut-and-dried adventures. You won't end up dead or out of play if you make a simple mistake, and there are several ways to finish the game.

Every so often, the action stops while "cut scenes" are introduced. These are like movie clips, where you can observe Dr. Fred, Edna, and Weird Ed in actions that might offer clues to aid you in your rescue effort. These scenes also help you keep track of what the house's inhabitants are up to. For example, by calling Nurse Edna on the telephone in the library, you can watch her answer it in her own room during the cut scene.

Everything about Maniac Mansion is big budget. From the superb sound track to the opening credits, it breaks down the traditional computer-player interface and places you in another world. And, in this movie, the script can be written several ways, depending on how you want to solve the adventure.

I found Maniac Mansion to be one of the best entertainment packages available, and I think you will, too. *(Lucasfilm; distributed by Activision, 2350 Bayshore Parkway, Mountain View, CA 94043. C-64/$34.95.)*

—JOHN RYAN
BILOXI, MS

## BOP'N RUMBLE ..... B+

*It's Rough 'n' Tumble Action On the Streets!*

Like Rocky Balboa, another fictional ring warrior is returning in a sequel. Gorgeous Greg, the hero of Mindscape's Bop'n Wrestle, faces more challenges in Bop'n Rumble. But, while the Rocky follow-ups have generally been panned as copies of the original, Greg's second adventure breaks fresh ground.

The wrestler has kept his gold spandex trunks and still uses his spectacular wrestling moves. However, the option

**Don't let those creeps take over the city in Bop'n Rumble.**

of competition between two human players has not been reproduced. A more positive change from the original format is the grappler's departure from the arena into a city that's overrun by bizarre thugs.

The brief instructions deliberately give little detail about the game's ten levels. In each of these stages, one or two players score points by using a joystick or the keyboard to successfully guide Greg through a dangerous neighborhood. Throughout the contest, the wrestler can duck, jump up, walk and leap to the left and right. He also has four attack moves, which are different on each level. For example, the computer input that produces a head butt during stage one generates a knee to the chest during the third round of play.

The characters that Greg meets also vary from level to level. A motley bunch they are, from bulldogs and gorillas to flashers and stick-wielding punks. With few exceptions, they attack on sight, either singly or in pairs. If their blows strike home, Greg weakens and eventually dies. When he has lost five lives, the game ends.

Bop'n Rumble's graphics are crisp and colorful. Its sound effects not only include the mandatory splats and thuds, but also a jazzy theme that plays during lulls in combat.

Fortunately, the game is more than just bells and whistles used to decorate a simple test of reflexes. To succeed, a player must constantly develop new tactics, because the effectiveness of each ►

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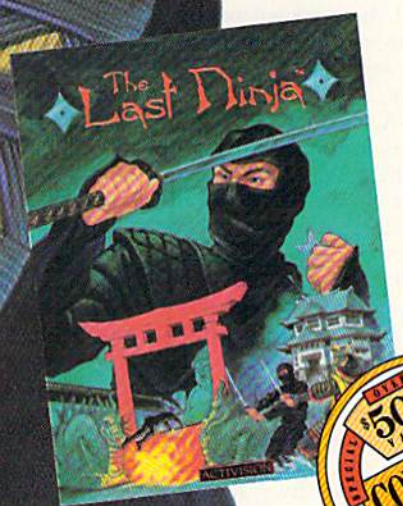

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possible move varies with different circumstances. For instance, some of Greg's blows are most powerful when delivered from a distance, while others are best for combat at close quarters. Having to puzzle out the appropriate action for each situation adds spice to the contest.

However, the software is not perfect. For one thing, its continuous violence will repel some players. Also, the program doesn't save updated versions of its high score screen to disk for viewing during future games.

But players who relish heroic arcade battles should still enjoy Bop'n Rumble. It offers a heady mixture of tactical choices and nonstop action. *(Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062. C-64/$29.95.)*

WALT LATOCHA
OAK PARK, IL

## PIRATES! ..... B+

### *Yo, Ho, Ho and A Bottle of Rum, Matey!*

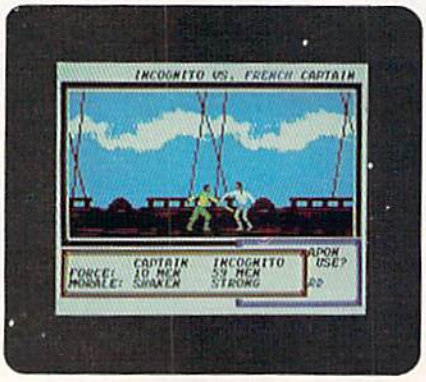
Sid Meier is probably best known as the creator of F-15 Strike Eagle, MicroProse's jet combat simulator that puts you in the cockpit of one of the most powerful and technologically advanced fighter planes in the world. Meier has turned his attention away from the high-tech world of jet fighters and toward the Spanish Galleons, treasure fleets and swashbucklers who sailed the Caribbean during the 17th century. Pirates!, an unusual blend of action and adventure, lets you sail back into this romantic period as an English or French buccaneer, a Dutch adventurer or a Spanish renegade.

The nationality you select as you begin your new career helps to determine the starting point of your adventure, the types of ships you'll sail, the size of your crew and, to some extent, the kind of reception you'll receive when you enter a new port or encounter other ships at sea.

You can also choose any one of six historical periods, from 1560 (The Silver Empire) to 1680 (Pirates Sunset). Each time period presents unique challenges and opportunities for fortune and adventure. For advanced players, Pirates! even gives you the option of commanding a famous expedition. For example, you can recreate the 1573 Silver Train Ambush as Francis Drake or play the part of John Hawkins in the 1569 Battle of San Juan de Ulua.

Pirates! is played entirely with a joystick; in fact, even menu selections are made by moving a flashing cutlass-shaped cursor over your option and pressing the fire-button. While travelling across the Caribbean, the joystick is used to steer your ship, but your swiftness depends on the speed and direction of the wind. When your lookout spots a sail on the horizon, you can either continue your voyage or investigate, in which case you'll be told the type of ship identified and the flag it's flying.

During battle, you can defeat the other ship by inflicting so much damage with your cannon that the enemy surrenders, or by pulling up alongside, boarding it, and dueling it out with swords. Here, various combinations of attacks, parries and slashes can be combined as you wield your choice of long-




**Shiver me timbers and blow the man down in Pirates!**

sword, cutlass or rapier.

Pirates! is not simply a simulation of naval battles and sword fights. Much of the game's character comes from your experiences on dry land. When you enter a town, you can visit the local tavern and interact with its patrons, pay a call on the governor, who may grant you special privileges in exchange for your services as a mercenary, or check on your personal status and the general status of your crew. You also have the additional options of dividing up your plunder and retiring, trading goods and ships with local merchants or saving the current game to disk.

Pirates! comes with a map of the Caribbean that shows the locations of the more than 50 towns you can visit. The clearly organized, 88-page manual gives you game instructions, with a wealth of historical information on colonial life during the 17th century and the ships of the period.

Although Pirates! may never achieve the block-buster status of MicroProse's F-15 Strike Eagle or Silent Service, it's clear that just as much research and hard work went into its development. The result is a well-designed game that is certain to please anyone fascinated with pirates and their time in history. *(MicroProse, 120 Lakefront Drive, Hunt Valley, MD 21030. C-64/$39.95.)*

—BOB GUERRA
SOUTH BOSTON, MA

## THE GRAPHICS TRANSFORMER ..... A+

### *A Program That Performs More Switcheroos Than a Magician!*

Slowly but surely, software programmers are realizing that there are a lot of Commodore computerists who'd like to be able to exchange high-resolution pictures among various drawing and printing programs. I've seen some very nice packages that help accomplish this transfer, but usually only for a handful of programs. With CDA's Graphics Transformer, you can convert files from over 20 different products, including GEOS, Print Shop, Koala and Doodle!.

The very best part of The Graphics Transformer is that the process is flexible enough to convert files from any of the programs supported to any of the other file types.

The instruction booklet is short and to the point, which is all that's needed, because on-screen prompting is very clear. The simple operation of the program shields the very complex tasks of conversion from the user.

The program uses a fast disk I/O routine that borders on the incredible. I tested the package on a C-128 (in 64 mode) with two 1571 disk drives. I've never seen anything work faster on my system.

CDA has included a full disk utility option just in case you need it. The Graphics Transformer is so complete that it even reads in the disk directory for you.

The conversion process begins by highlighting the files you want to convert. A header at the top of the screen displays all kinds of useful information, such as disk name and ID, blocks free and used, number of files on disk, number of files selected for conversion, disk drive status and the source and destination drive numbers. The Graphics Transformer fully supports dual disk drive operation.

During conversion, you're given a va- ►

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Each module includes an easy-to-understand guide PLUS a 5¼" floppy disk containing typical programs and interactive instruction that you can run on Commodore 64 and 128 computers, IBM PCs and PC compatibles for hands-on experience.

In the first Module, for example, when your sample program (Declining Interest Loans) appears on your screen, you'll find errors on certain program lines. You'll also see that the program is only three-quarters completed.

Now comes the fun part. You'll discover how this program is built, and in the process you'll learn how to identify and correct errors. And by the end of Module 1, you'll actually have completed this program yourself.

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riety of choices to enhance or change the picture. You can strip the image of color; flip the picture horizontally, vertically or both; change bit colors; or scroll the picture, one pixel at a time, in any direction. If at any time you do something that results in an unacceptable image, there's a restore option.

When I tried converting some of my own pictures, I was reminded of something you should keep in mind. As you begin converting pictures, you might not get the result you expect. At first, you may think it's a program problem. In reality, you might have done something in the original picture that's coming back to haunt you. For example, I had a high-resolution picture of my company logo. In using Koala Painter, I had "painted" some pixels the same color as the background. It looked fine, but from a storage standpoint, the individual pixels I changed were stored as part of the high-resolution image, whereas the background color was stored only once. In conversion, the result can be somewhat different.

The CDA package also automatically takes care of formatting the name of the converted file to work with the package you've specified.

The Graphics Transformer has a few more tricks up its sleeve. Images can be converted to a "stand-alone" file. The instructions refer to it as "a compressed, autobooting, fast-loading" file of your picture. If you're interested in game programming and wish to create your pictures using the drawing program of your choice, you can then use the Multi File option to create three individual files—bit map, screen and color (for multicolor only) memory.

If you're in a position where you often want to transfer pictures from one program to another, The Graphics Transformer is a virtual must for your collection of software utilities. It is extremely well done. *(CDA, Inc., PO Box 1052, Yreka, CA 96097. C-64/$34.95.)*

—JIM GRUBBS
SPRINGFIELD, IL

## DEFENDER OF THE CROWN ..... A

*It's Almost Like Playing Camelot On Your Commodore*

Fortunately for C-64 owners, many of the same breathtaking aspects that are seen and heard when Defender of the Crown runs on the Amiga can be perceived with Mindscape's recent conversion of the program to C-64 format. But Defender is more than just another pretty face. Set in 13th century England and termed an "interactive movie," it's actually a strategy contest that combines elements of role-playing games with action sequences.

At the beginning of Defender, you choose your character from one of four Saxon lords—Wilfred of Ivanhoe, Wolfric the Wild, Geoffrey Longsword or Cedric of Rotherwood. Each lord is rated for his skill in leadership, jousting and swordplay, and much of the game's strategy comes from knowing the strengths and weaknesses of the other lords, and using this information to your advantage on the battlefield. To survive, you must be able to hold your own, not only against two of the other Saxon lords, but also against three Normans.

**In Defender of the Crown, the countryside looks peaceful, until your lord and his sword appear.**

You and each of the five computer-controlled lords are given a castle in one of 18 territories. Neutral territories can be seized simply by moving troops into them, but capturing a territory under another lord's control requires fighting it out on the battlefield. Here you can stand and fight, attack ferociously, bombard the enemy with your catapults, outflank the enemy or retreat.

No matter which strategies you select from the on-screen menu, the winner of the battle is often the lord with the largest army. Every territory you control contributes vassals to help you fight your battles and gold you can use to buy soldiers, knights, catapults and castles.

One way to gain additional gold is by raiding an enemy's castle. In perhaps the game's best animated sequence, you use your sword to fight your way past the guard in the enemy's torch-lit courtyard, enter the castle and continue to duel with the captain of the garrison until you force him to the top of the stairs where you can finish him off. When you do, you'll be able to enter an inner chamber that contains the store of gold.

The joust, another one of the game's action sequences, occurs whenever you or one of the other lords calls a tournament. Amid much fanfare and pageantry, you mount a steed and charge toward your enemy with your trusty joystick-controlled lance. Although I've never been successful at the joust, the idea is to unseat your enemy by striking him in the center of his shield. Here again, winning has a lot to do with the preset jousting ratings possessed by both you and your opponent.

Defender of the Crown was one of the first adventure/strategy games to be released for the Amiga, and the game's stunning images of torch-lit castles and beautiful damsels, along with a great musical soundtrack, helped to convince many people of the machine's graphic and sound potential. With the conversion of Defender to C-64 format, its designers have done an excellent job of reproducing these now-familiar images without sacrificing much of the original detail. More important, the game still features the same combination of action, adventure and strategic depth that keeps things interesting once you get your breath back. *(Cinemaware; distributed by Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062. C-64/$34.95.)*

—BOB GUERRA
SOUTH BOSTON, MA

## PRESIDENT ELECT ..... B–

*And If I'm Elected, I Promise To . . .*

No matter what I do, the candidates I like lose. This suggests that either my judgment or the country is in trouble. But I have to admit that SSI's 1988 Edition of President Elect is fun, engaging and, yes, educational.

President Elect, a tactical political simulation for one, two or three players, lets you simulate, in approximately 60 minutes or so, any nine-week presidential campaign from 1960 to 1988. Using historical, potential or imaginary candidates, you can choose and plan campaign strategies for Republican, Democratic or third party hopefuls, or let the computer run the operation.

If you choose a candidate other than one of the 69 (the documentation claims 72, but I count three less) already in the computer's database, you have to rate the candidate on various issues to ►

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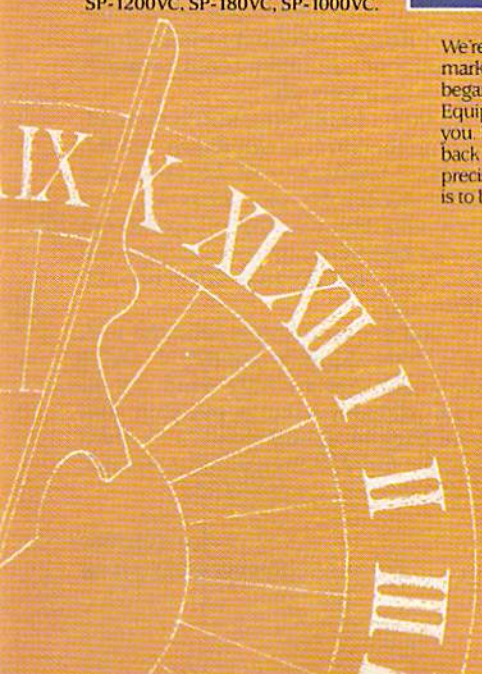

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establish his or her degree of liberalism or conservatism. From there, you can rate attributes like magnetism and speaking ability.

At the start of the game, the computer establishes the political climate of a specified year. For a 1988 simulation, the manual suggests economic and political input that you can alter.

If you, and not the computer, are managing the election, you must allocate your resources among national, regional and key-state campaigning. If the candidates agree to debate, you control their responses to computer-generated questions. At the end, you can choose to view the election returns minute by minute or instantaneously.

The game is easy to learn—a relatively well-organized manual helps explain screens and prompts that might seem incomprehensible at first. The documentation presents notes on strategy and useful political and historical information.

An intelligent playing of the simulation, however, requires some political and current events knowledge—for example, the current rate of GNP growth or the meaning of the NAACP agenda. After all, the more accurate the information, the more value the game has as a predictor.

And how accurate, in fact, can this simulation be? It doesn't take into account all important variables. For instance, the only attribute of a vice-presidential candidate that's noted is geographic region—sex, race and religion are ignored.

The design of the game also limits your control of the variables. There are times when world events might inspire you to change your mind about an option such as a trip abroad, yet there is no way to alter a previous choice without rebooting.

The play itself is both engaging and frustrating. Various screens include weekly polls, data on campaign stops, debate questions, colorful maps reflecting weekly standings, and election night projections. There's a lot of wait time, however, especially in the week-by-week campaigns managed by the computer. Some patriotic music, waving flags, historical facts scrolled across the screen, or even dancing elephants and donkeys would add interest.

Nonetheless, this game has unquestionable educational value for high school and college students, as well as for adults. The simulation, in conjunction with the documentation, presents the nuts and bolts of campaigning, and historical as well as political information. It fosters decision making and critical thinking skills.

The initial version of the game, issued in 1981, correctly predicted Reagan's 1984 landslide. President Elect, 1988 Edition, predicts a closer race. To find out which party is most likely to win, play the game. Maybe someone can discover a strategy to let the good guys win! *(Strategic Simulations, Inc., 1046 N. Rengstorff Ave., Mountain View, CA 94943. C-64/$24.95. Owners of the original version can receive this edition by sending in the old disk with $10 plus $2 shipping and handling.)*

—SHARON WEINER
CHICAGO, IL

## 1541/1571 DRIVE ALIGNMENT ..... B

*Straighten Out and Get Those Disk Drives On the Right Track*

What goes "rattle, klank, thud," is a few inches high and is found next to many Commodore computers? The answer, of course, is Commodore's 1541 disk drive. Its younger cousin, the 1571, can also be located there.

Why is the 1541 so cantankerous? According to Free Spirit Software, when a particular track on the disk isn't where the microprocessor in the drive thinks it ought to be, it repositions (read that: smacks the heck out of) the head by hitting it against the stop assembly, thereby putting it out of alignment.

Some software companies, in their quest for the perfect software protection system, deliberately introduce errors onto their disks. These errors also encourage the disk drive to perform such repositioning.

Owners of the 1571 are slightly more fortunate. A photo-electric cell helps to handle such situations a bit differently. Still, some disk errors will make the 1571 render a gut-wrenching clatter. I know; I had one that did just that.

The 1541/1571 Drive Alignment program might be just what you need if you have a similar problem. It did the trick for me.

From an operational standpoint, the program couldn't be easier to use. On-screen instructions walk you through the testing procedure, which lets you check head alignment for any track on the disk, including half-steps. A speed check can also be performed. This program not only tells you what it finds, it gives you a quality rating, in plain English.

Armed with information on the condition of your drive, you can then elect to align the drive. (Caution: This isn't for the faint of heart.) The second side of the program disk contains a precision track alignment signal. The program can align the 1541, 1541C and 1571 drives, and also the drive in an SX-64. The degree of difficulty in making the needed adjustments varies from model to model. It's relatively simple on the 1541 series. The 1571 can be a bit more challenging, depending on which production model you have, and the SX-64 can prove very difficult.

I got my 1571 back into alignment, but it's not a task I suggest for a beginner. That's not the fault of the software, but rather a function of the hardware. If you're too timid to do the alignment yourself, the program can still be used as a diagnostic aid to periodically check the health of your drive. When it starts getting bad, you might want to take it into your Commodore service center for adjustment.

A brief, eight-page manual adequately describes the procedure and the operation of the program. The drawings appear to have been made using some sort of simple computer-assisted drawing program, and they could be much clearer than they are.

Be sure and read the instructions regarding the 1571. It will always fail the head stop test because of the electronics that won't let the 1571 head move to track zero. Also note that off-speed conditions can be easily corrected on the 1541 series, but the 1571 offers no such adjustment.

If you are moderately talented with tools, Free Spirit's 1541/1571 Drive Alignment and a steady hand are all you'll probably need to put your disk drive back in tip-top shape. *(Free Spirit Software, Inc., 538 S. Edgewood, LaGrange, IL 60525. C-64, C-128/$34.95.)*

—JIM GRUBBS
SPRINGFIELD, IL ■

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# Lyco Computer

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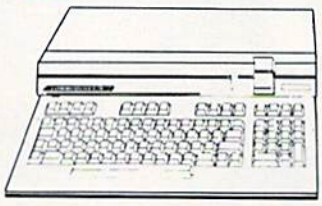

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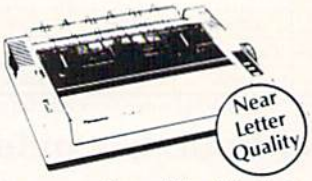


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| 1581 Disk Drive | $195.95 |
| Indus GT C-64 Drive | $169.95 |
| Blue Chip 64C Drive | $CALL |
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| 1802C Monitor | $189.95 |
| 2002 Monitor | $239.95 |
| 1901 Monitor | $CALL |
| 64 C Computer | $169.95 |
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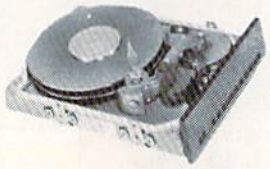
| C-1351 Mouse | $32.95 |
| 1700 RAM | $109.95 |
| C-1750 RAM | $169.95 |
| 1764 RAM C64 | $124.95 |

### Seagate HARD DRIVES



| | |
|---|---|
| 20 meg kit | $269.95 |
| 30 meg kit | $299.95 |
| 40 meg kit | $489.95* |

*Drives include controller

| | |
|---|---|
| 40 meg w/o controller | $425.95 |

### PC COMPATIBLE HARDWARE

| | |
|---|---|
| PC 5¼ Drive | $119 |
| MS DOS + Basic Soft | $59 |
| BCM 12G Gr. Monitor | $89 |
| BCM 12A Am. Monitor | $89 |
| BCM 14C Color RGB Monitor | $269 |
| BCC CG Color Card | $94.99 |
| BCPC PC/XT Comp | $559 |
| Avatex Graphics Card | $169 |
| Zuckerboard | $CALL |
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### COMMODORE 64C System

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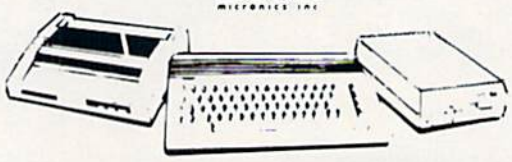
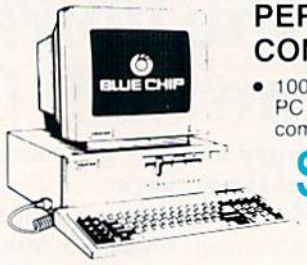
- Commodore 64 C Computer
- Commodore 1541 C Drive
- star MICRONICS INC NP 10 Printer



### BLUE CHIP PERSONAL COMPUTER

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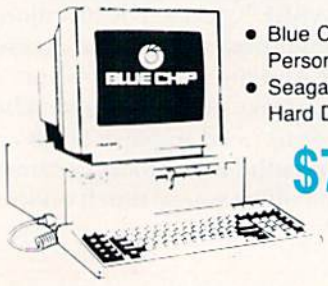


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| Xetec Jr | $38.95 |
| Xetec Supergraphics | $58.95 |
| PPI | $45.95 |
| Cardco GWhiz | $35.95 |
| Cardco Super G | $45.95 |

## Joysticks

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|---|---|
| **Tac 3** | **$9.95** |
| **Tac 2** | **$10.95** |
| **Tac 5** | **$12.95** |
| **Tac 1 + IBM/AP** | $26.95 |
| Economy | $5.95 |
| Slik Stick | $6.95 |
| Black Max | $10.95 |
| Boss | $11.99 |
| 3-Way | $19.99 |
| Bathandle | $16.75 |
| 500XJ | $13.95 |
| 500XJ-Apple/PC | $28.95 |
| Winner 909 | $24.95 |
| Wico IBM/AP | $29.95 |
| Contriver Joystick Bd | $34.95 |

## Dustcovers

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| Pan 1081 | $9.95 |
| Pan 1091 | $9.95 |
| Epson FX286 | $14.95 |
| Epson FX86 | $9.95 |
| Epson LX86 | $9.95 |
| Star NX10 | $9.95 |
| Star SR10 | $9.95 |
| Star SR15 | $14.95 |
| Oki 182-192 | $9.95 |

## Printer Paper

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|---|---|
| 200 sheet laser | $9.95 |
| 1000 sheet laser | $19.95 |
| 150 sheet ivory, 20lb | $9.95 |
| 150 sheet white, 20lb | $9.95 |
| 1000 sh. Gr. bar 14" | $29.95 |
| 1000 mailing labels | $9.95 |

## Surge Suppressors

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|---|---|
| QVS Surge 6-outlet | $24.95 |
| QVS Surge 6-outlet with EMI/RFI | $32.95 |
| QVS Surge 6-outlet with indicator | $29.95 |
| QVS 6-out. Pow. Strip | $14.95 |

## Drive Maintenance

| | |
|---|---|
| **Nortronics 5¼ Drive Cleaner** | **$9.95** |
| **Nortronics 5¼ Drive Cleaner Kit** | **$17.95** |

## Video Tape

**SKC T120 VHS Video Tape:**

| | |
|---|---|
| each | $4.49 |
| 3 pack | $12.75 |
| 10 pack | $39.90 |

## COMMODORE

**Access:**

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|---|---|
| **Echelon** | **$25.95** |
| Leader Board | $22.95 |
| Mach 5 | $19.95 |
| Mach – 128 | $28.95 |
| 10th Frame | $22.95 |
| Triple Pack | $11.95 |
| Wld. Cl. Leader Brd. | $22.95 |
| Famous Courses #1 | $11.95 |
| Famous Courses #2 | $11.95 |

**Action Soft:**

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|---|---|
| Up Periscope | $18.95 |
| Thunder Chopper | $NEW |

**Activision:**

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|---|---|
| Aliens | $19.95 |
| Champion. Basketball | $19.95 |
| Hacker | $8.95 |
| Hacker 2 | $19.95 |
| Labyrinth | $19.95 |
| Music Studio | $19.95 |
| Tass Times | $16.95 |
| Titanic | $11.95 |
| Leather Goddesses | $22.95 |
| Stationfall | $19.95 |
| Lurking Horror | $19.95 |
| Top Fuel Eliminator | $15.95 |

**Berkeley Softworks:**

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| Geos | $35.95 |
| Deskpak I | $20.95 |
| Fontpak I | $17.95 |
| Geodex | $23.95 |
| Geofile | $29.95 |
| Writers Workshop | $29.95 |
| Geo Calc | $29.95 |

**Broderbund:**

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|---|---|
| Bank St. Writer | $27.95 |
| Carmen San Diego | $19.95 |
| Graphic Lib. I, II, III | $13.95 |
| Karateka | $12.95 |

**Epyx:**

| | |
|---|---|
| Create A Calendar | $15.95 |
| Destroyer | $22.95 |
| Fastload | $19.95 |
| Football | $11.95 |
| Movie Monster | $11.95 |
| Sub Battle | $22.95 |
| Winter Games | $22.95 |
| California Games | $22.95 |
| Super Cycle | $11.95 |
| Graphics Scrapbook | $11.95 |
| Str. Sports Basketball | $22.95 |
| Wld.'s Great Baseball | $11.95 |
| Summer Games II | $22.95 |
| Vorpol Utility Kit | $11.95 |
| World Games | $22.95 |

**Firebird:**

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|---|---|
| Colossus Chess IV | $19.95 |
| Elite | $18.95 |
| Golden Path | $22.95 |
| Guild of Thieves | $22.95 |
| Pawn | $22.95 |
| Talking Teacher | $22.95 |
| Tracker | $22.95 |
| Starglider | $22.95 |
| Sentry | $22.95 |

**Microleague:**

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|---|---|
| Microleag. Baseball | $22.95 |
| General Manager | $16.95 |
| Stat Disk | $13.95 |
| '86 Team Disk | $11.95 |
| Microleag. Wrestling | $New |

**Microprose:**

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|---|---|
| Airborne Ranger | $CALL |
| F-15 Strike Eagle | $19.95 |
| Gunship | $19.95 |
| Kennedy Approach | $13.95 |
| Silent Service | $19.95 |
| Solo Flight | $13.95 |
| Top Gunner | $13.95 |

**Origin:**

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|---|---|
| Autoduel | $28.95 |
| Ultima III | $22.95 |
| Ultima IV | $33.95 |
| Moebius | $22.95 |

**Springboard:**

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| Certificate Maker | $29.95 |
| Clip Art Vol. #1 | $17.95 |
| Clip Art Vol. #2 | $23.95 |
| Clip Art Vol. #3 | $17.95 |
| Graphics Expander | $21.95 |

**Strategic Simulations:**

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|---|---|
| Gemstone Healer | $16.95 |
| Gettysburg | $33.95 |
| Kampfgruppe | $33.95 |
| Phantasie II | $22.95 |
| Phantasie III | $22.95 |
| Ring of Zelfin | $22.95 |
| Road War 2000 | $22.95 |
| Shard of Spring | $22.95 |
| Wizards Crown | $22.95 |
| War in the S. Pacific | $33.95 |
| Wargame Constr. | $16.95 |
| Battlecruiser | $33.95 |
| Gemstone Warrior | $7.95 |
| Battle of Antetiem | $28.95 |
| Colonial Conquest | $22.95 |
| Computer Ambush | $33.95 |
| B-24 | $19.95 |

**Sublogic:**

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|---|---|
| Flight Simulator II | $31.49 |
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| Night Mission Pinball | $18.95 |
| Scenery Disk 1-6 | $12.95 |

**Timeworks:**

| | |
|---|---|
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| Hacker 2 | $24.95 |
| Music Studio | $29.95 |
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**Firebird:**

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|---|---|
| Guild of Thieves | $26.95 |
| Pawn | $26.95 |
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**Epyx:**

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|---|---|
| Apshai Trilogy | $13.95 |
| Rogue | $22.95 |
| Winter Games | $22.95 |
| World Games | $22.95 |

**Microprose:**

| | |
|---|---|
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| Leader Board | $24.95 |
| 10th Frame | $24.95 |
| Tournament #1 | $14.95 |

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|---|---|
| Flight Simulator II | $32.95 |
| Jet Simulator | $32.95 |
| Scenery Disk | $17.95 |

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|---|---|
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| QVS-75 5¼ | $16.95 |
| QVS-40 3½ | $11.95 |

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### 5-1/4

**Maxell:**

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|---|---|
| SSDD | $7.95 |
| DSDD | $8.95 |

**Bonus:**

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| SSDD | $5.95 |
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**SKC:**

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|---|---|
| DSDD | $6.95 |
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**Verbatim:**

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|---|---|
| SSDD | $8.99 |
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### 3.5

**Maxell:**

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|---|---|
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| DSDD | $17.95 |

**Verbatim:**

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|---|---|
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|---|---|
| SSDD | $11.95 |
| DSDD | $13.99 |
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## IBM

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| Champ. Baseball | $22.95 |
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| Moonmist | $22.95 |

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| Print Shop Compan. | $31.95 |
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| Karateka | $19.95 |
| Toy Shop | $22.95 |
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**Epyx:**

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|---|---|
| Apshai Trilogy | $11.95 |
| Create A Calendar | $15.95 |
| Destroyer | $22.95 |
| Movie Monster | $11.95 |
| Rogue | $16.95 |
| St. Sports Basketball | $22.95 |
| Sub Battle Simulator | $22.95 |
| Winter Games | $22.95 |
| World Games | $22.95 |

**Firebird:**

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|---|---|
| Starglider | $25.95 |
| Guild of Thieves | $25.95 |

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**Microleague:**

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|---|---|
| Microleag. Baseball | $22.95 |
| General Manager | $16.95 |
| Stat Disk | $13.95 |
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**Microprose:**

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| Silent Service | $22.95 |
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**Strategic Simulations:**

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|---|---|
| Road War 2000 | $22.95 |
| Kampfgruppe | $33.95 |
| Shard of Spring | $22.95 |
| Battle of Antetiem | $33.95 |
| Computer Baseball | $7.95 |
| Gettysburg | $33.95 |
| Wizards Crown | $22.95 |
| Chickamauga | $33.95 |

**Sublogic:**

| | |
|---|---|
| Jet Simulator | $31.49 |
| Scenery Japan | $17.95 |
| Scenery San Fran. | $17.95 |
| Scenery #1-#6 | $64.95 |
| Flight Simulator | $34.95 |

**Timeworks:**

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|---|---|
| Swiftcalc | $39.95 |
| Wordwriter | $34.95 |

**Unison World:**

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|---|---|
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| News Master | $49.95 |
| Print Master (+) | $29.95 |
| Fonts & Borders | $17.95 |

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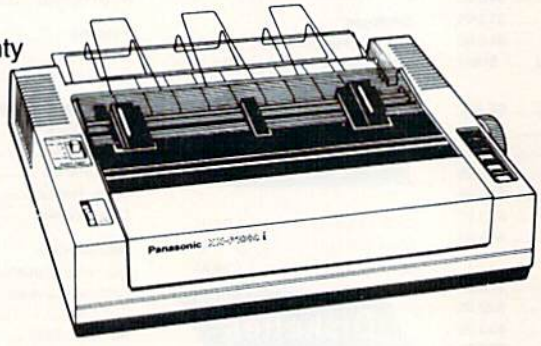
**Panasonic**
**1080i *Model II***



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### Wide Carriage Special

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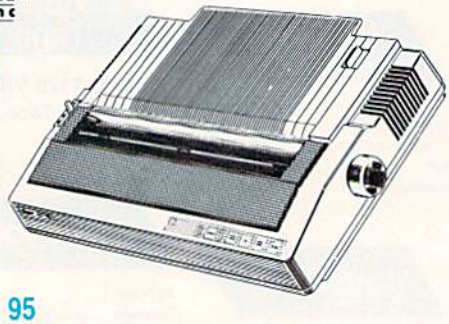

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| 1592 | $379 |
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| Okimate 20 w/cart | $179.95 |
| 120 | $189.95 |
| 180 | $219.95 |
| 182 | $199.95 |
| 192+ | $309.95 |
| 193+ | $449.95 |
| 292 w/interface | $449.95 |
| 293 w/interface | $585.95 |
| 294 w/interface | $819.95 |
| 393 | $955.95 |

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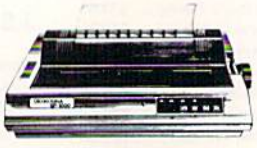

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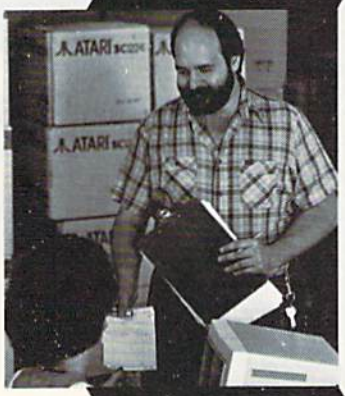

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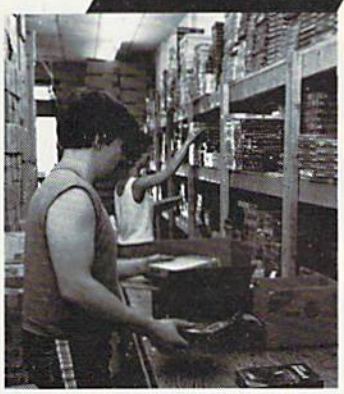

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Resolutions:

# A Happy New You!

*Make your 1988 resolutions easier to keep with the wide range of self-help software available for Commodore computers.*

HOW COULD I use my C-64 to better manage my life?" I mused aloud. My wife had an immediate answer: "Sell it and buy a home-exercise unit, spend Saturdays working in the yard instead of visiting with computer buddies and use those floppy disks for coasters, so the drink glasses don't leave water rings."

Ohhhh, me! Sitting in front of the computer has gotten me into this mess. Can it also get me out? Well, bless its little microchip, it can. There's light at the end of the cathode-ray tube.

Type faster. Drive better. Cook gourmet foods that will expand your waistline, then contract it through exercises. Prepare for the SATs. Draw up a will. No matter what your goal, there's probably C-64 software to help you reach it. Computer programs can not only help you learn, but can also provide the incentive to keep your self-improvement resolutions.

## To Your Health

Let's face it: Typing in *RUN* magazine programs isn't really making your cardio-vascular system healthier, is it? But your Commodore can improve your heart and circulation in other ways. According to Bob Bowden, a developer of personal health programs, teaching about health and monitoring exercise are tasks that the computer is good at.

Said Bowden, "A computer can be a big incentive to start an exercise program and a help in keeping track of it. The computer can also help keep you motivated through the first 28 days of an exercise regime—the period when you're most likely to lose interest."

Bowden's Exercise Tracker is a program with few bells and whistles, but lots of useful information. It can figure the range of heartbeat rate that'll give you the most benefit from an exercise ►

By LONNIE BROWN

ILLUSTRATION BY R. KENTON NELSON

*The program also lets you record your mood at mealtime, since moods affect eating patterns.*

session. For outdoor activities, it can calculate heat and chill indexes, taking into account humidity and wind speed, both of which influence the way the temperature affects your body. Based on your weight and the duration of your exercise sessions, the program will also calculate calories burned and keep a monthly total; and, if you bike, walk or jog, it will log the distance you cover and represent it on a map as if you were crossing the U.S.

Bowden's other programs include Vitamin Advisor, which outlines what vitamin supplements you may need, and Planning Tanning, which helps you achieve a beautiful tan with brief exposure to the sun, instead of the usual blister-and-peel method.

He's also written a program for teenage boys called For Ectomorphs Only. Ectomorphs are those lucky people who can eat everything in the refrigerator without becoming the size of one. "Some young boys turn to steroids to build their bodies," Bowden said. "This program provides a natural way to gain weight and strength."

## Watch Your Step!

Computers can really keep you on your toes—in fact, you can put a computer on your toes! Puma's RS-Computer Shoe features a built-in computer that calculates how many steps you've run, your elapsed time and how many calories you've burned. At the end of a run, you can place the shoe's memory on hold until you have a chance to dump it to a C-64. Saving the information to disk lets you monitor your daily, monthly and yearly progress in graphic form. You can also tell your sole-mate how far you want to run; then, when you've covered the specified distance, it beeps to alert you.

## Counting Calories

The Original Boston Computer Diet, from Mindscape, is a well-balanced and respected diet/exercise program. Its nontechnical manual provides a clear understanding of what calories are and why your body turns some of them into fat, and the program comes with a database for keeping track of the calories in your diet. The program also lets you record your mood at mealtime, since moods affect eating patterns. The diet includes foods from six basic groups and encourages food swapping to prevent diet boredom.

When it comes to diet and health, keep in mind, too, that spreadsheets like *RUN*'s own RUN Calc provide an easy way to keep track of exercise, monitor calorie intake and perform the calculations associated with weight control.

## Fine Tuning

Disk-based instruction for stringed instruments can't replace teachers, books and records, but it can provide a change of pace and increased incentive.

DJ Software's Easy Guitar, for beginners, offers a computerized pitchpipe, an exercise to help you develop a sense of pitch, 50 chord diagrams, an adjustable metronome and a built-in rhythm section. An included quiz helps you assess your progress, as does a video game that tests chord knowledge.

According to its packaging, Guitar Wizard, from Baudville, is designed to help intermediate and advanced players "fine-tune their play." The Chord Wizard section displays and prints out the different locations of chords on the guitar's neck, while Scale Wizard does the same for scales. Fretboard Wizard displays or prints the chord and scale pattern at the same time, and Improvisation Wizard helps you create improvised solos by suggesting notes to play with various chords. The program also includes sections on music theory and technique.

## The Chips Are Down

With casinos using computerized poker machines, Applications Plus has come out with a program called Vegas Video Poker, which is designed to improve your chances of drawing good hands at computer poker. In computer poker, the goal is to get a hand with a pair of jacks or better, so you can win back even money on your bet. The graphics are plain, but the emphasis is not on arcade-type action, but on learning how to play the odds to your advantage.

The machine lets you discard and draw up to five cards to improve your hand. Using computers, Vegas Video programmers analyzed the outcome of various discard options as many as 25,000 times, then converted the results into payback ratios to see which options would return the most money to the player. For instance, given a mismatched hand with a jack as the high card, should you discard the whole hand? The Vegas

Video experts say no—hang on to the jack. Tossing out all five cards produces a payback ratio of 33 cents on each dollar bet; starting with a jack increases the probability of drawing a pair and results in a payback ratio of nearly 50 cents on the dollar.

### If You're a Chess Nut...

While poker mixes skill and luck, winning at chess depends on skill alone. You can increase your skill with Enlightenment's Paul Whitehead Teaches Chess, one of the best chess instruction programs available. More than 60 hours of instruction are included on the program's three disks, and at any point you can exit the instruction boards to test yourself on the Coffeehouse Chess Monster, a computer chess game with nine skill levels. Enlightenment also distributes Jeremy Silman's Guide to Chess Openings.

### Driving the Point Home

As the program points out, Keys to Responsible Driving, developed by CBS Software and distributed by Mindscape, is no substitute for a driver education course. However, the nine self-paced sections will augment a real-life course. The sections cover handling a vehicle, traffic signs, regulations, how stress and drugs affect responses, and so on. Pretests determine how much you already know about a subject; posttests determine how much you've learned.

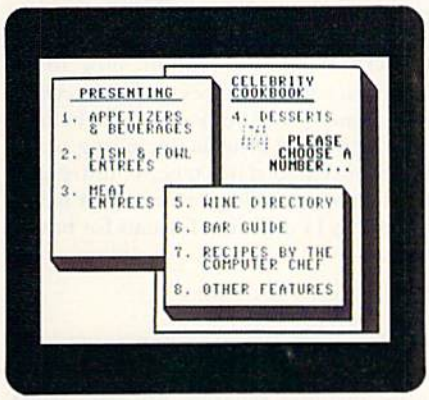
The two-disk program also produces pictures of driving situations you might encounter and displays stopping distances and reaction times in the form of bar graphs. For instructors, it keeps a list of students and their progress.

### Cheers!

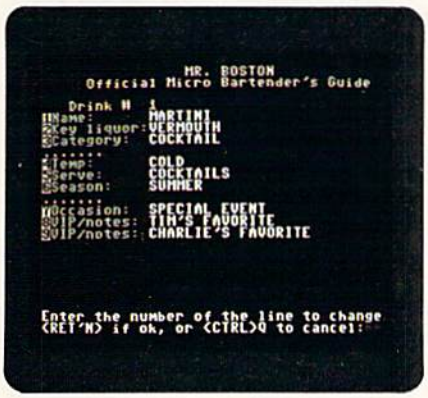
Concept Development Associates has computerized the mainstay of the bartender's bookcase in Mr. Boston's Official Micro Bartender's Guide. The printed guide has been published in 62 editions over a 50-year span, and more than nine million copies have been sold. The electronic version comes with more than 1000 drink recipes, a complete wine-selection list, descriptions of beers of the world and provision for adding recipes or changing them to suit your taste.

If you're expecting a crowd of 500 for cocktails, no problem. Mr. Boston will quickly determine the proper proportions for one to 999 servings of any drink. It can also search for drinks by various parameters, including name and main ingredient; lets you note which drinks your friends like and recall the list later; and prints out recipes and a shopping list covering liquor, mixers and glassware. An abridged version of the program is also available. ►

*The sort of document Micro Lawyer can produce.*




*Celebrity Cookbook's menu leads you to a host of delicious recipes.*




*Mr. Boston's Guide tells you all you need to know about potent beverages.*

*Searching for the Perfect College?*

*. . . maybe your typing's terrible. Well, several C-64 programs stand waiting to help.*

CDA's Micro Wine Companion, now in its third edition, ties wine choices to food recipes from the company's cookbook disks (see below). It catalogs wines by 19 criteria, including price, approximate purchase date, type, country and flavor; provides wine-tasting reviews; and prints pocket reviews in 11 different formats for handy reference.

### CHOW!

Concept Development also publishes a complete set of cookbooks on disk. The America Cooks series includes separate program packs covering such cuisines as Chinese, Italian, American, Mexican and French. Each package contains recipes from 20 to 24 top chefs representing each nationality, plus wine suggestions to complement the recipes.

CDA's Great Chefs program is a three-volume collection of more than 300 recipes from Public Broadcasting's television series by the same name. The program can alter recipes so that you can accommodate any number of guests, and it prints out lists of ingredients and instructions. You will find this a handy feature, since computers are seldom located in the food-preparation area.

These cookbook programs are versatile in searching through recipes by various parameters, such as name, main ingredient, whether the dish is served hot or cold and whether it's a main dish, side dish or dessert.

If you'd rather cook like a celebrity instead of a great chef, you'll be interested in The Celebrity Cookbook, from The Dream Machine. This program isn't as chock full of recipes as the others, but it still includes many offerings. It also provides a recipe filer and a quiz for determining if your weight problem is psychological, plus sections on nutrition, shopping manners and what food preferences reveal about personality. A bartender's guide provides instruction on making a dozen popular drinks, while a related program determines how much booze to buy for a big party.

### COMPUTER TUTORS

Doing homework isn't fun, but Spinnaker Software's Homework Helper programs can make it easier. Homework Helper—Writing, for instance, breaks writing down into three stages: prewriting, writing and rewriting. It then applies these divisions to two types of assignments: book reports and essays. Book reports are further broken down into fiction, biography and informational, and essays into descriptive, narrative, persuasive and expository.

You specify the type of document you want to create; then the program automatically leads you through its preparation. For a book report, it begins by asking you the theme of the book, and even suggests universal themes to help. It also asks about the setting, characters and other particulars. Finally, you call up the built-in word processor to flesh out your answers into a completed report.

For persuasive essays, the program wants supporting arguments, as well as arguments that might be used by the opposition. It's a tedious process—but that's what writing is all about.

Spinnaker's Math Word Problems presents word problems, then shows you how to determine what's being asked and how to come up with an equation to solve the problem.

### JUST YOUR TYPE

Of course, you might want to write letters to your friends about how you've slimmed down, hit the video-poker jackpot and learned to cook gourmet dishes, but maybe your typing's terrible. Well, several C-64 programs stand waiting to help.

Typing Tutor IV, from Simon & Schuster Software, is an upgrade of Typing Tutor III, a program that's sold 300,000 copies in three years. The new version asks how you type now (hunt-and-peck? two-finger? touch?) and how many hours a week you have for practicing, then tailors your lessons accordingly. It also distinguishes between upper- and lowercase letters and, recognizing that many people now use word processors instead of typewriters, lets you backspace to delete errors, even at a sacrifice of speed. Typing Tutor IV's Instructor mode can hold records for eight students, review their progress, add new tests, delete records and give multiple-level speed tests, and its Letter Invaders game spices up practice with arcade-type action.

MasterType, developed by The Scarborough System and distributed by Mindscape, displays fingers resting at the home position on the keyboard, then wiggling to show how to move to the upper and lower rows of the keyboard and back. ►

**Table 1. Distributors and prices.**

**Applications Plus**
15720 Harmony Way
Apple Valley, MN 55124
612-432-5560
*Vegas Video Poker*—$29.95

**Baudville**
1001 Medical Park Drive SE
Grand Rapids, MI 49506
616-957-3036
*Guitar Wizard*—$24.95

**Robert Bowden**
4907 22nd Ave. W
Bradenton, FL 34209
813-792-4876
*Exercise Tracker*—$15
*For Ectomorphs Only*—$10
*Planning Tanning*—$10
*Vitamin Advisor*—$10

**Concept Development Associates**
45 Cordova St.
St. Augustine, FL 32084
904-825-0220
*America Cooks series*—$14.95 each
*Great Chefs*—$65
*Micro Wine Companion*—$49.95
*Mr. Boston's Official Micro Bartender's Guide*—full version, $29.95; abridged version, $14.95

**DJ Software**
10636 Main St., Suite 414
Bellevue, WA 98004
206-883-9257
*Easy Guitar*—$30

**The Dream Machine**
Merrill Ward & Associates
255 N. El Cielo Rd., Suite 222
Palm Springs, CA 92262
619-320-5828
*The Celebrity Cookbook*—$29.99

**Electronic Arts**
1820 Gateway Drive
San Mateo, CA 94404
415-571-7171
*Mavis Beacon Teaches Typing*—$39.95

**Enlightenment, Inc.**
1240 Sanchez St.
San Francisco, CA 94114
415-641-9131
*Jeremy Silman's Guide to Chess Openings*—$59.95
*Paul Whitehead Teaches Chess*—$59.95

**Nolo Press**
950 Parker St.
Berkeley, CA 94710
415-549-1976
*WillWriter*—$39.95

**Mindscape**
3444 Dundee Rd.
Northbrook, IL 60062
312-480-7667
*Keys to Responsible Driving*—$89.95
*MasterType*—$39.95
*The Original Boston Computer Diet*—$49.95
*The Perfect Score* (including *The Perfect College*)—$69.95; *The Perfect College* alone—$19.95

**Progressive Peripherals & Software**
464 Kalamath St.
Denver, CO 80204
303-825-4144
*MicroLawyer*—$59.95

**PUMA U.S.A.**
492 Old Connecticut Path
Framingham, MA 01701
617-875-0660
*RS-Computer Shoe*—$199.95 per pair

**RUN Magazine**
80 Elm St.
Peterborough, NH 03458
800-258-5473
*RUN Calc* (in ReRUN Productivity Pak III)—$19.97

**Simon & Schuster Software**
Gulf & Western Building
One Gulf + Western Plaza
New York, NY 10023
212-373-8882
*Typing Tutor IV*—$39.95

**Spinnaker Software**
One Kendall Square
Cambridge, MA 02139
617-494-1200
*Homework Helper—Writing*—$32.95
*Math Word Problems*—$32.95
*Hayden Score Improvement System for the SAT*—$39.95

**Timeworks**
444 Lake Cook Rd.
Deerfield, IL 60015
312-948-9200
*Evelyn Wood Dynamic Reader*—$29.95

*Your C-64 may not be a lawyer, but there are programs for it that offer competent legal assistance.*

There are 18 lessons, each concentrating on a different section of the keyboard.

New on the scene is Mavis Beacon Teaches Typing, manufactured by Software Toolworks and distributed by Electronic Arts. If you're an adult, you'll practice on passages from Mavis's library of 1000 historical writings, while youngsters get to type jokes, riddles and rhymes. Mavis "speaks" in conversational tones while analyzing your typing mistakes. The program also displays a keyboard with fingers that type along with you to show correct fingering, and it lets you set a metronome to encourage even typing. To break the monotony, an Indy Racer game is included on the Mavis Beacon disk.

### SAT: Software Anticipates Testing

The letters SAT, for Scholastic Aptitude Test, often strike fear into the hearts of high school students. But now, as software anticipates testing, they signify help as well.

Among the programs students can turn to in preparing for this test is the Hayden Score Improvement System for the SAT, from Spinnaker. This extensive program fills seven disks and is divided into three sections: math, verbal and practice tests. The math section provides review in algebra, geometry, quantitative comparisons and word problems, while the verbal section covers vocabulary and reading comprehension. The practice tests include a diagnostic pretest for revealing the skills you need to work on, as well as two complete tests that are similar to the real thing, so you'll know what to expect on exam day.

Mindscape's Perfect Score preparation program for the SAT occupies six double-sided disks. The 149-page manual, which comes in a three-ring binder, provides detailed test-question examples. The package includes a separate program, the Perfect College database, which lists 1600 colleges and universities and lets you search for institutions according to criteria such as location, academic emphasis and cost.

### Don't Move Your Lips!

If you need to improve your reading comprehension and speed, Timeworks' time-tested Evelyn Wood Dynamic Reader promises help. It flashes sentences and phrases on the screen and tells you how long you have to read them. There's no cheating and no looking back. Your progress is recorded on disk for review later in an easy-to-comprehend bar chart.

### Your Computer as Counsel

When a person begins a sentence with, "Now, I'm not a lawyer, but. . .," watch out! However, if it's a Commodore speaking, you might well listen. Your C-64 may not be a lawyer, but there are programs for it that offer competent legal assistance.

For instance, WillWriter from the Nolo Press is designed to produce a valid will. The book accompanying the program says many people resist making or updating their will "to avoid high lawyer fees." However, if you need only a simple will, you may be able to prepare it for only the price of this program. Several estate attorneys who have looked at WillWriter said it is suitable for people who have uncomplicated estates and no business ventures.

WillWriter's book helps you determine if a simple will can meet your needs. If so, you go on to the program, which produces a thorough document, including gifts to children and others.

Progressive Peripherals' MicroLawyer produces blanks of more than 100 commonly used legal forms, to be used, as the program states, "in conjunction with advice from your lawyer."

Why bother with the program if you need a lawyer anyway? Because, in the process of filling out the forms, you'll gather needed information and focus your direction, thereby reducing the number of hours for which you'll have to pay your attorney.

### There's More

From cookstove to courthouse, C-64 software can help you do things faster and more proficiently. This article is only a sampling of available programs, so look around and read *RUN*'s software reviews and advertisements. Without appropriate software, your Commodore doesn't live up to its full potential, and maybe you aren't living up to yours, either. ■

*Lonnie Brown is an editorial writer and computer columnist for a New York Times-owned newspaper in central Florida.*

# Get Results

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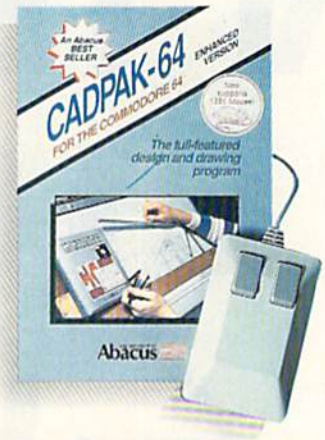
**Super Pascal**—Get the fastest and complete Pascal for your computer. **Super Pascal** is a full implementation of standard Pascal. Extensive editor features search, replace, etc. Even add machine language routines with the built-in assembler. Fast graphics library. C-64 version has high-speed DOS for faster access. More than just a compiler–**Super Pascal** is a complete system that gives you programming results.
**C-64 $59.95 C-128 $59.95**

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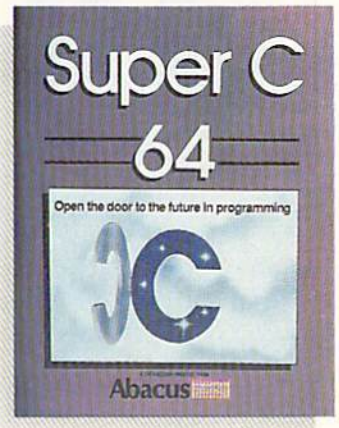
**C-64 $39.95 C-128 $59.95**

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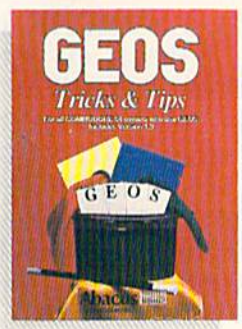


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# RUN TERM 128

By TOM BROWN

**RUN TERM 128** IS A POWERFUL TELECOMMUNICATIONS PROGRAM OFFERING FEATURES THAT RIVAL THOSE OF COMMERCIAL PROGRAMS. IT SUPPORTS BOTH 40- AND 80-COLUMN MODE; 300 AND 1200 BAUD; BOTH THE PUNTER AND XMODEM FILE-TRANSFER PROTOCOLS; A NINE-NUMBER PHONE BOOK; AN AUTODIALER THAT WORKS WITH THE COMMODORE 1650, 1660 AND 1670, AND WITH THE HAYES MODEMS; A 60K TEXT BUFFER; AND MORE!

RUN TERM 128 IS COMPOSED OF FIVE DISK FILES. USING *RUN*'S NEW CHECKSUM PROGRAM ON PAGE 80 OF THIS ISSUE, TYPE IN EACH FILE CAREFULLY AND SAVE IT TO A FRESHLY FORMATTED BLANK DISK. THE LISTINGS APPEAR IN A SPECIAL FORM, CONSISTING OF HEXADECIMAL DATA AND A SMALL BASIC HEADER THAT READS IN THE HEX DATA, CONVERTS IT TO INDIVIDUAL BYTES, AND THEN ACTUALLY CREATES A BINARY FILE ON YOUR DISK.

ONCE YOU'VE SAVED ALL FIVE FILES TO DISK, RUN THE FOUR HEX LISTINGS TO CREATE THE ACTUAL PROGRAM FILES. THEN LOAD AND RUN THE BASIC PROGRAM CALLED BOOT.RUNTERM128. WHEN THE PROGRAM HAS BEEN ACTIVATED, THE SCREEN FLICKERS MOMENTARILY AND PROMPTS FOR THE TIME APPEAR. PRESSING THE RETURN KEY AT THE FIRST PROMPT (AM/PM) ZEROES THE CLOCK AND EXITS TO TERMINAL MODE. ►

RUN it right: **C-128; modem**



ILLUSTRATION BY ROWENA SMITH

At this point, the Status line (see below) appears at the top of the screen, accompanied by a brief help menu listing the main program commands. You can also bring up this menu by pressing the help key from Terminal mode.

Whenever the Status line (marked by the clock on the right side) appears on the screen, you're in Terminal mode, and the main ALT commands (see below) are active. When you select a program option, the Status line disappears and these commands are no longer available. Normally, this is because you're being asked for a menu selection, filename or other input.

When you return to Terminal mode, the screen is usually the same as you left it, except in Conference mode and during file transfers. Some ALT commands don't change the screen at any time during execution.

### The Status Line

The top line of the screen is called the Status line and displays information on the program's internal settings. On the right end of the line is the clock. If your modem can detect a carrier, you'll see a lowercase c to the left of the time whenever a carrier is present. On the left end of the line is the baud rate—either 300 or 1200. To the right of the baud rate is a set of single-letter flags: b e w j t d s. Their meanings are as follows:

**b**—the text buffer is open to receive characters from the modem for later retrieval.

**e**—the Echo function is on. Sometimes called half-duplex, Echo displays what you've typed, if the service you're on doesn't echo characters back to your computer.

**w**—the Buffer Wrap function is on. When the text buffer fills up, buffer wrap makes it wrap around to continue to accept data. Otherwise, the buffer closes when it's full.

**j**—linefeeds from the modem will be printed to the screen. When this option isn't on, linefeeds are ignored. This feature works by changing the Input Translation table.

**t**—ASCII translation during Xmodem file transfers is activated.

**d**—DLE screening (used for PC Pursuit) during Xmodem file transfers is on.

**s**—padding will be stripped from the end of files downloaded using any Xmodem option. If an s isn't present, such padding is retained.

When any of the above letters don't appear in the Status line, those options are not in use.

### The Translation Table

All the keys behave in their default state, as they do in the VT100 program on the 1670 demo disk, and RUN Term 128 uses the same translation tables as VT100. However, RUN Term 128 isn't specifically designed for VT100 emulation, so some substitute keypresses are needed. I've used the ones that follow, with the Commodore substitute listed first.

Shifted + equals {
Shifted – (minus) equals }
Commodore/– equals |
Shifted ↑ equals ~
↑ equals ^
£ equals \
Shifted @ equals

Note that escape sequences aren't supported by RUN Term 128, so the program may not operate properly on remote full-screen editors.

### The ALT Commands

To view most of RUN Term 128's available commands, press the help key. Execute these commands by holding down the ALT key at the top of the keyboard as you press the desired command key. The following are the ALT key commands available in RUN Term 128:

**A**—Accesses Autodial mode. First you must specify your modem type, then the number of seconds you want to elapse between dial attempts. Finally, you can enter a number directly or use the Phonebook.

The Phonebook commands are a straightforward Load, Save and Edit. If you choose to Edit with nothing in memory, a new blank book is created for you.

You can enter nine numbers in a Phonebook. Each entry includes the name of the BBS, its phone number and three strings, which can be used to send a log-on sequence. If you're using the 1670/Hayes option, the first character of every phone number must be a letter p or t (note the lowercase) to indicate pulse or tone dialing. With the 1650 or 1660 dialing option, an asterisk in the phone number delays dialing for one second.

**B**—Toggles the Text Buffer open and closed. To find out where you are in the buffer, press the help key. Below the list of commands you'll see the present position of the buffer write pointer, with the maximum possible value of the pointer in parentheses.

**C**—Selects Conference mode, which makes a number of simultaneous connections possible. At the top of the screen, you'll see a row of 80 reverse-video spaces, where your characters appear as you type. There's no cursor in this mode. Press control/X to erase the whole line, or use the delete key to erase individual characters as usual. Your line of text won't be sent until you press the return key. Characters received from the modem are printed at the bottom of the screen. It's recommended that you instruct the on-line service *not* to echo your characters back while you're using this option.

The *only* way to exit Conference mode is with the stop key, because none of the ALT command keys are available. However, settings such as Buffer Open/Close, Echo and Baud Rate that are selected in regular Terminal mode are active in Conference mode. In other words, open the buffer *before* entering Conference mode!

**D**—Downloads (receives) a file from another computer. This option works only with drive 8. You have a choice of Punter protocol or one of three Xmodem protocols: Checksum, CRC or WXmodem.

Don't worry if you don't know which Xmodem protocol to use. Checksum is the standard, and the program automatically switches from WXmodem to CRC and from CRC to Checksum, if it doesn't connect properly using the protocol you selected.

WXmodem, which stands for Windowed Xmodem, is relatively new to Commodore users. Available only on PeopleLink (PLink), it transfers four Xmodem blocks at a time, so it's faster than Checksum or CRC.

To abort Punter transfers, hold down the Commodore key. To abort Xmodem transfers, hold down the stop key.

Punter indicates a block has transferred correctly by printing a hyphen to the screen or incorrectly by printing a colon. Xmodem clearly lists the number of blocks and the number of errors in the transfer as ASCII digits.

During any Xmodem transfer (up- or download), the file is visible on the 40-column screen as it moves. If you're in 80-column and want to view a file as it passes through, you can switch to 40 columns by using the composite/RGB switch on your monitor.

Since Xmodem files must be transmitted in blocks of 128 bytes, you may have to add bytes to the last block to give it the full 128. This is called file padding and is done using either control/Zs or CHR$(0)s (zero bytes).

The Xmodem standard requires the transmitting program to make sure the byte used for padding is *different from* the last byte of the file. A few Xmodem programs (including *RUN*'s RUNning Board BBS) fail to do this, so downloads from them using the Pad Stripping option may be garbled. To remedy this, turn off the Pad Stripping option by using the appropriate option from the Default submenu (see * below).

**E**—Toggles the Echo mode—sometimes referred to as *half-duplex*—on and off. When Echo mode is off, you're in *full-duplex*. If you can't see what you're typing when you're online, turn on Echo mode.

**F**—Sequential file reader. Use this command to send a file to the screen, printer or modem. See Boot.RUNTerm128 (Listing 1) for the printer device and secondary address number Pokes, which default to device 4 and secondary address 7. A file is translated to ASCII when sent to the modem.

**H**—A modem, like a phone, can be "off the hook" or "on the hook." This option works only with the 1650 and 1660 modems, and it's a toggle, because the pick-up command for the 1650 is the hang-up command for the 1660.

To hang up the 1670 and other Hayes-compatible modems, press the plus-sign key three times in rapid succession from Terminal mode, with a pause both before and after the trio of keypresses. The pause tells the modem you're sending a command, not just sending a line of plus signs to the remote terminal or BBS.

To pick up a 1670/Hayes modem, type in an uppercase ATD to access Originate mode (like dialing without a phone number) or an all-caps ATA to force your modem into Autodial mode.

Main menu for RUN Term 128, showing the options.

**J**—Toggles linefeed printing. This option actually changes the Input Translation table. Some services always send CHR$(10) (a linefeed) with each return, leaving you with double-spaced text. It's usually best to turn linefeeds off, unless you need them.

**K**—RUN Term 128 redefines only the help key and the shifted run-stop key, but, using Basic 7.0 commands in Direct mode, you can define a set of function keys for your own special use while online. This option lets you load and save these keys easily.

**L**—Loads a sequential file into the text buffer, starting at the buffer write-pointer position. When the load is finished, the write-pointer is updated, allowing you to append several other sequential files. To force the load into the start of the buffer, first zero the buffer (see Z below).

When you return to the Terminal mode, remember that the screen is preserved during operations such as loading the buffer. If you had the main menu on the screen before the buffer load, you'll find the buffer write-pointer unchanged when you return to Terminal mode.

Press the help key again if you want to see the updated buffer write-pointer.

**S**—Saves your choice of the entire buffer area (60K) or the area from the start of the buffer to the buffer write-pointer. The first of these options is handy for use with the Buffer Wrap feature and the second for saving short pieces of data. The save is directed to your choice of three devices: to disk, as a standard sequential file; to the printer (see F above); or to the modem (with ASCII translation).

**T**—Sets the on-screen clock. By pressing return at the AM/PM prompt, you can instantly zero the clock.

**U**—Uploads (sends) a file via Punter or one of two Xmodem protocols: Checksum or CRC. Due to hardware limitations in the C-128, WXmodem (see D above) isn't available for uploading files.

**V**—View the text buffer. Text is formatted on the screen, with a left arrow taking the place of a return. The following key commands are active in this option:

*Cursor down:* Scrolls the buffer forward (advances through the text).

*Cursor up:* Scrolls the buffer backward (toward the beginning of the text).

*Plus sign:* Scrolls forward 256 characters.

*Minus sign:* Scrolls backward 256 characters.

*Home:* Moves to the start of the buffer. Any other keypress exits to Terminal mode.

**W**—Toggles the Buffer Wrap function. Sometimes it's inconvenient to have a buffer close in the middle of a transmission. This option forces the buffer write-pointer back to the start of the buffer to continue writing, without the buffer closing. Note that the Buffer Wrap option works only when you're saving the entire 60K buffer (see S above). If this option is turned off, the buffer closes when it's full.

**Z**—Zeroes the buffer and fills the entire buffer with CHR$(13)s (returns). When you press Z, the Terminal mode screen doesn't change, but the cursor vanishes, then reappears shortly.

**@**—Sends a disk command. When you're prompted for a command string, input is a dollar sign to Read the Directory. Pattern matching is possible here, as in the C-128's machine language monitor.

To read the disk drive's error channel, just press return without entering a command string.

Disk commands should be sent the same way as with the DOS Wedge, except you can omit the @ as the first character.

*****—Changes several system defaults. Select the proper menu options here to change the foreground and background colors; Punter protocol block size; and parity, stop bit, word length and delete key values.

Don't change the above parameters unless you know what you're doing! Also, changing the delete key value alters the Input and Output Translation tables. RUN Term 128's delete key value is CHR$(20), while some computers you call may use CHR$(127) or CHR$(8).

You can also opt for three Xmodem features here. One is ASCII translation, which makes text files more readable if they were written on another computer using true ASCII.

The second is DLE screening. Long-distance services, such as PC Pursuit, use the same Xmodem commands for their own operation as you use for file transfers. If the other computer has DLE screening available, then turn this option on.

The third Xmodem option is to strip file padding at the end of Xmodem downloads. The default is on (indicated by a letter s on the Status line). Turn this option off, and any bytes added to the end of the file during the transfer to your computer are left intact. Some programs won't work unless the extra padding is removed.

**!**—Toggles between 300 and 1200 baud. Don't select 1200 baud unless you have a 1200-baud modem! Also, don't change baud rates while online. Modems that support 1200 baud, such as the 1670, set their own baud rate when you type in the ATD command to dial, and they can't change that setting until you hang up.

**1, 2, 3**—Holding down the ALT key with number key 1, 2 or 3 sends one of the three Phonebook strings to the modem, with translation to ASCII. Note that you must have dialed with the Phonebook option and that the selected Phonebook must still be in memory, so don't load another while you're still online. These three keys are deliberately sent slowly, due to problems I've experienced at 1200 baud with some online computer services.

**Escape**—Pressing the escape key while holding down the ALT key returns you to Basic. Don't press run-stop/restore! To reactivate RUN Term 128, type in the following in Direct mode and press return:

```
BANK0:SYS22000
```

## Acknowledgments

My thanks go to Kermit Woodall of PeopleLink (PLink) for not only turning my CRC Checksum routine into CRC Xmodem, but for going one step further and creating WXmodem, a protocol that was "physically impossible" for computers without a UART (Universal Asynchronous Receiver/Transmitter) chip! He has placed his work in the public domain, and for that we should *all* thank him. R

*Tom Brown has been writing programs for Commodore computers since 1983. His Prototerm for the C-64 has been a public domain staple for BBSs.*

*Continued on p. 88.*

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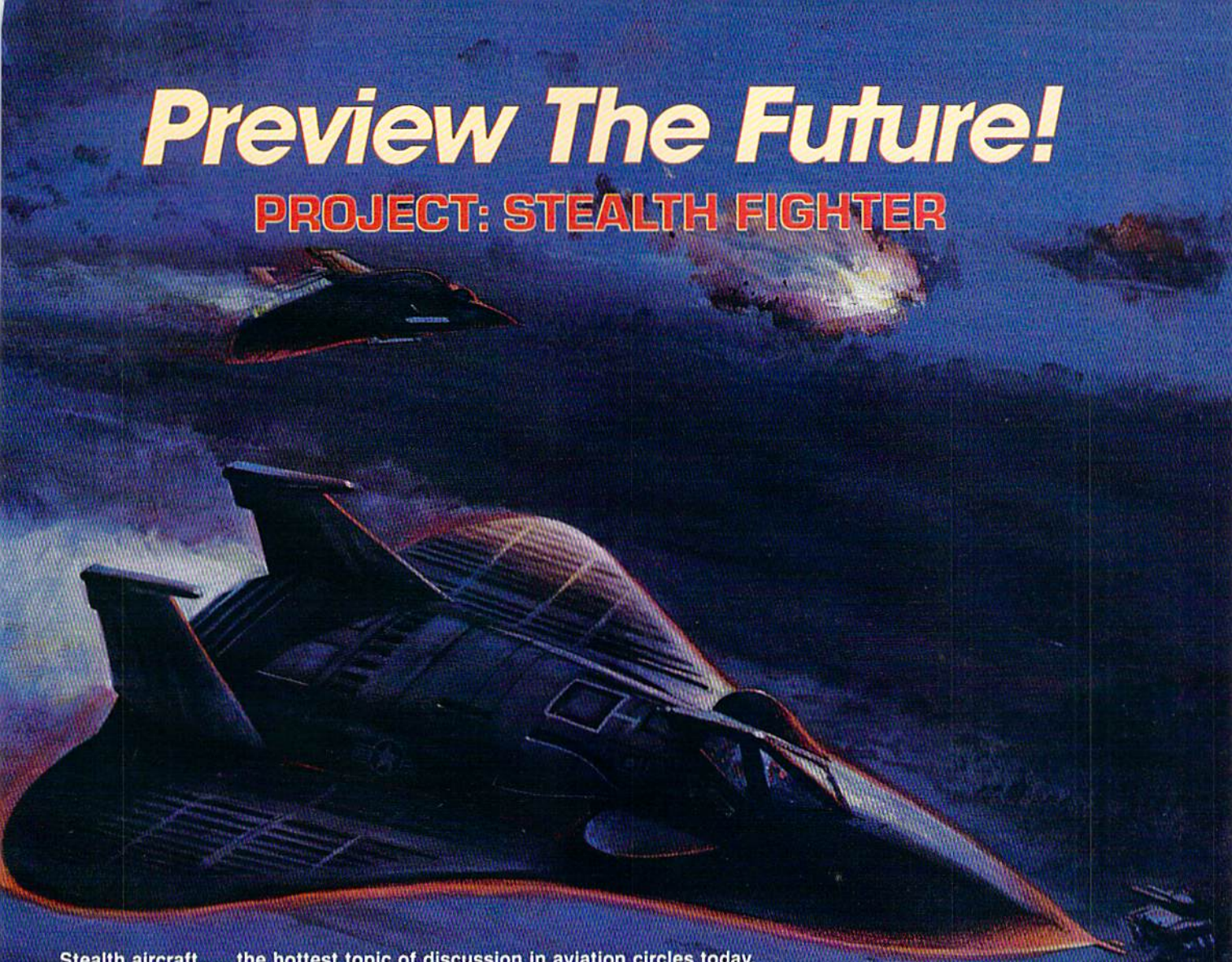

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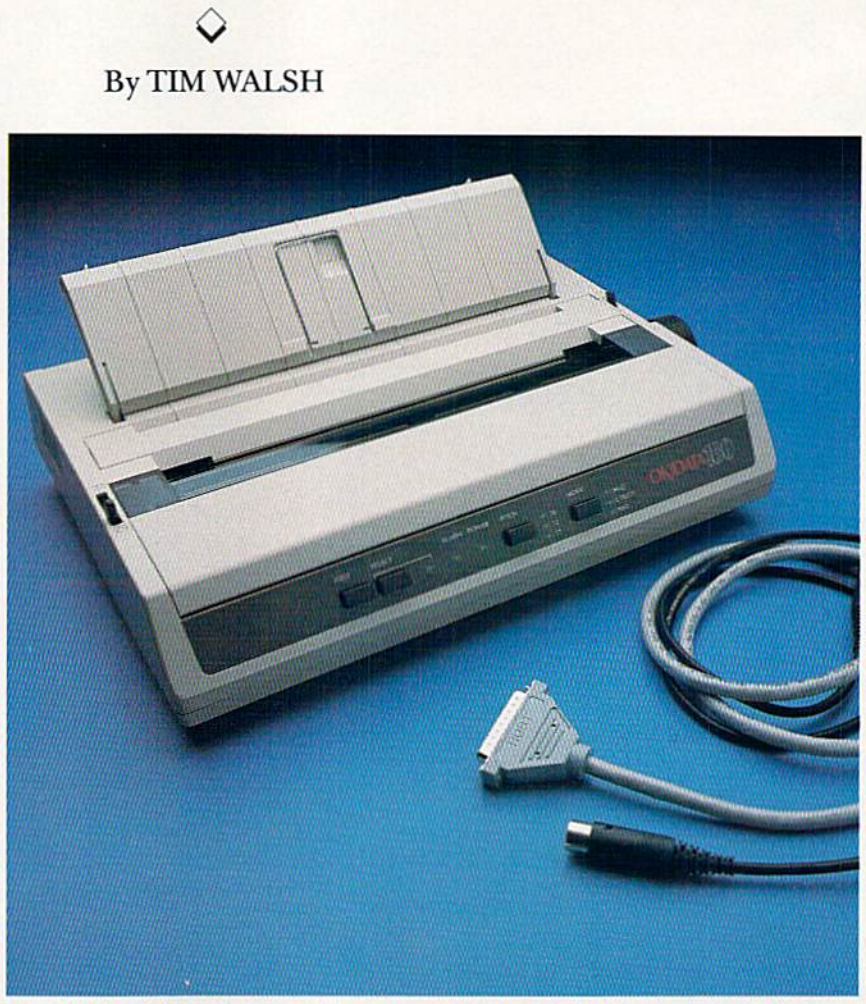


By TIM WALSH

After reading several Okidata 180 press releases that passed through the office, I couldn't wait to get one of these printers. After all, it isn't every day that a manufacturer announces a 180-character-per-second printer that's Commodore compatible right out of the carton.

A speed of 180 cps is usually associated with expensive 24-pin, high-end printers, not low-cost machines aimed at the home market. Faster speed does not necessarily result in a better printer, though. Even the most conscientious manufacturers might sacrifice some reliability and software compatibility in the name of faster speed. Ideally, if the printer offers fast printing, it should complement the increase in speed with heavy-duty construction, software friendliness, and, above all, a price tag that doesn't outweigh that of your entire computer system. I'll let you be the judge as to whether or not the Okidata 180 meets or exceeds those desirable attributes.



**The Okidata 180, shown with accompanying serial and parallel cables.**

## Delivery Day

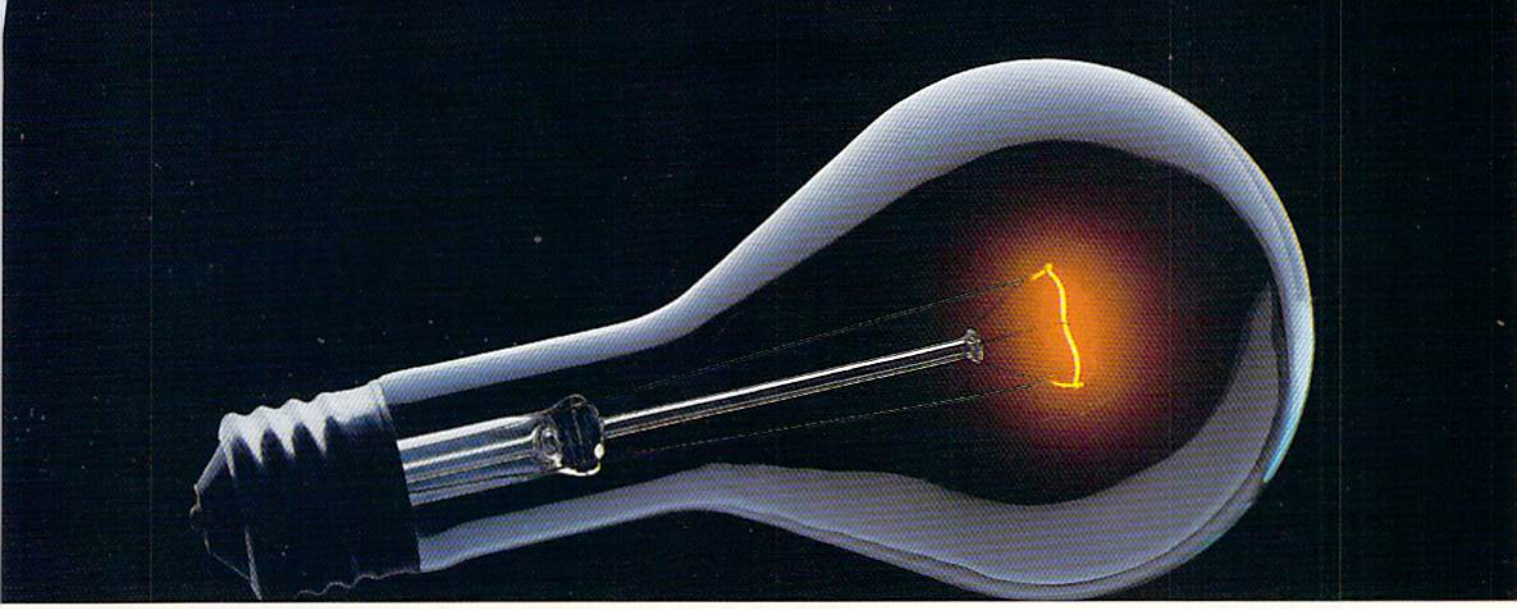
When the 180 arrived, I was pleased to find a printer that had the same high quality of appearance found in other Okidata printers, such as the 182 and the Commodore-compatible 120. One look, and Okidata 180 buyers will know that their money wasn't wasted on flimsy, low-budget hardware.

As the press releases promised, two cables were packaged with the unit, one designed for use with the printer's Commodore-compatible serial port and the other for interfacing the printer's parallel port with parallel computer systems. Remove the styrofoam packing materials, plug the serial cable into your disk drive, pop the nylon ribbon cartridge (replacement cost: $8.95) in place, and you're ready to print.

With dimensions of 14.2 × 10.8 × 3.2 inches, the 180's size is roughly in the same ballpark as many other printers of its class. Four control buttons and a total of nine small LED-type lights are located on the front panel. The leftmost feed button lets you perform a printer self-test. It also controls line-feeds and, if held down for a second or two, form-feeds. Next to that button is the select button, which lets you perform hex dumps and toggle the printer on- and off-line.

Moving to the other side of the control panel, the rightmost button lets you choose from three print modes: Near Letter Quality, Utility (draft) and HSD (High-Speed Draft). Finally, the button to the left of the print-mode button permits the selection of 10-, 12- or 17.1-character-per-inch print pitch.

Other print controls include a bank of dual in-line package (DIP) switches hidden under a cover in the rear of the unit. Once you find a screwdriver to remove the cover, you'll be able to use the DIP switches to select Commodore or Epson printer emulation, set both form lengths and automatic linefeeds, ►



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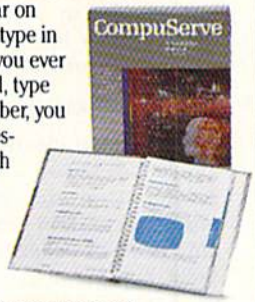


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choose international character sets, adjust graphics density and assign the unit a printer device number of 4 or 5.

One feature I found useful was a folding paper separator located on top of the unit. It locks into an upright position for single sheets and folds flat for continuous forms. Rather than try to incorporate a fancy, complicated design, Okidata opted for simplicity, and the result is an effective, easily manipulated paper separator. Incidentally, the 180 also has an opening underneath for an alternative method of printing continuous forms.

Like other Okidata printers, tractor-feed sprockets are built into both ends of the platen roller, which means that they cannot be adjusted. This raises the question of how you print continuous mailing labels with this printer. You won't find any clues in the manual, but having gained experience with a few Okidata printers of similar design, I've developed a sure-fire solution. Lower the paper separator, then align the holes on the left side of the labels with the left sprocket teeth and set the paper lever to friction feed. Aligning your addresses horizontally is simply a matter of using your label program to set the left margin; or you can choose to set the printer's left margin to a default value that works best with your labels.

## Documentation

An 88-page, clearly written reference guide takes you on an informative printer tour and provides about as much information as most users probably need in order to use the 180 with their computer systems. Okidata devotes eleven pages of the manual to instructions on using the printer with commercial software. Half of those pages are devoted to three Commodore word processors: PaperClip, Easy Script and WordPro.

For the most part, the instructions explain how to access some of the Okidata 180's various print options from those software packages. For instance, you'll find the control-code format for underlining with PaperClip, getting subscripts within Easy Script and assigning decimal codes in WordPro. None of the instructions go into great detail, but they're substantial enough to get you started.

## Compatibility Campaign

Exhaustive testing revealed that the printer works with a variety of Commodore-specific graphics packages. I subjected it to the equivalent of the acid test. Connected to my C-128D, it

was barraged for weeks with endless work—screen dumps of graphics, commercial printing packages, manuscripts, program listings—you name it, I tried it.

I found the print quality in Near Letter Quality mode as good as or better than most printers in the 180's price range, but not quite as crisp as the Commodore-compatible Star NL-10, the printer whose NLQ mode serves as a bench mark by which all other low-cost printers should be measured. Overall, though, the NLQ mode is probably impressive enough to attract many buyers. NLQ is available in both 10- and 12-pitch print modes.

Draft and High-Speed Draft modes are both clear and are easier to read than Draft modes on most other printers. Not only is the quality and readability exceptionally good, but it is very easy to change modes. Simply press a button to select the off-line mode of the printer, then toggle through NLQ, Draft and High-Speed Draft. Of course, if you opt for software control, the manual does list the printer-control codes used to access those options.

As mentioned previously, the 180 supplies an Epson mode that opens up a great deal of flexibility, especially for those who need the features the Epson mode offers. For starters, it gives you 9-pin graphics and a choice of eight graphic densities, ranging from a single density of 60 dots per inch, up to a high of 240 dots per inch in quadruple-density graphics.

Like all Epson-compatible printers, accessing these graphics in your own programs requires some effort on the part of the user, and the manual gives the same advice I do—purchase a software program that lets you enter the codes needed to access those graphics. Getting such software is no problem, since nearly every commercial software package for the C-64 and C-128 provides Epson printer drivers.

The 41 Commodore and 58 Epson control codes that the manual clearly lists in both decimal and hexadecimal configurations make programming the 180 through software fairly easy. Every print option, from selecting print pitch to setting tabs, is given, but no mention is made of which features can be mixed together. For instance, NLQ isn't available in 17.1 cpi mode, so entering that combination of control codes is ineffective.

With the printer in Commodore mode, you have a choice of 10, 12 or 17.1 cpi printing. In Epson mode, a fourth print pitch of 20 cpi is offered, which allows printing up to 160 characters per line. Other print options available include sub- and superscripts, enhanced, emphasized, double-width and underline printing, in both Commodore and Epson modes. Like most Epson emulation modes, it also offers an italicized character set.

When using the 180 with graphics printing packages, I expected it to work well, and it did. In Commodore mode, with software using printer drivers such as 1525, MPS-1000, MPS-1200, and so on, the printer works very well. Print Shop, Newsroom and Printmaster graphics all print without a hitch and look great on the 180.

In an effort to discover the printer's performance using the parallel connector, I performed testing on an Amiga 500 and was alarmed to discover the printer didn't work in Parallel mode. Further investigation revealed that the 180 was innocent of any wrongdoing—the printer port on the Amiga was defective.

## Conclusion

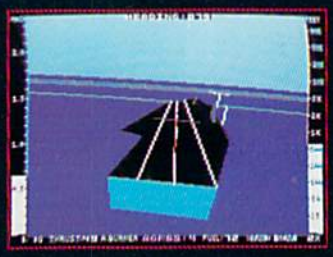
Overall, the 180 is a fine printer. New owners certainly won't be disappointed with it. It looks good, operates quietly and quickly and offers a compatibility option that doesn't limit your use to the C-64 and C-128. I'd have a hard time deciding between purchasing the 180 and quite a few other top-notch competing printers, such as the Commodore MPS-1200 and 1250, the Star Micronics NL-10 and NX-10 and a half-dozen or so parallel printers.

The mere fact that the advent of the 180 makes the purchasing decision so difficult says a lot for the printer. If it had any significant shortcomings, the decision would be easy. *(Okidata, 532 Fellowship Rd., Mt. Laurel, NJ 08054. $329.)* ■

*Tim Walsh, RUN's technical editor, is our indefatigable resident hardware tester and reviewer.*

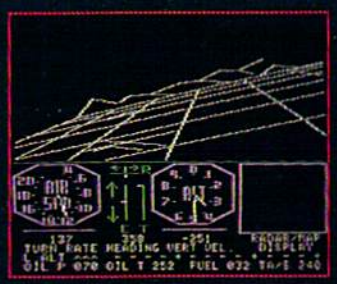
1987 - Expanding Scenery disk coverage; East Coast, Japan, & Europe

1986 - Flight Simulator II for the 68000 computers

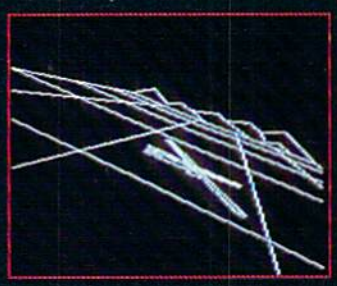


1985 - High-performance Jet flight simulator for the IBM, Commodore 64, and Apple II computers

1982/1983 - Microsoft Flight Simulator & Flight Simulator II



1979 - 3D graphics applied to the original FS1 Flight Simulator for the new Apple II and TRS-80 computers



1977 - SubLOGIC's 3D graphics package in BASIC and M6800 Assembly Language

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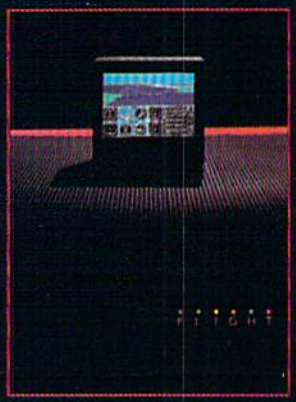
(except in Illinois)



# *RUN*'s Memo Book

*Now your frequently used names and addresses are available at the press of a key.*

By BARBARA MINTZ

If you'd like to set up a simple, versatile file system with a minimum of effort and a maximum of flexibility, then it's time to add *RUN*'s Memo Book to your collection of C-64 application programs. Memo Book is an electronic "Rolodex" you can organize and format any way you want, then flip through the pages at will. And "flip" it is, for the machine language program is fast, and your data is held in memory, so no time is lost in disk access.

## Getting Started

Type in Listing 1 using *RUN*'s Checksum, and save it to disk. Once it has been saved, run it and Memo Book installs itself at the top of Basic memory, starting at address $9400. Then it resets the top-of-Basic pointers to that address, so Basic programs won't interfere with Memo Book's operation. About 141 blocks are left free for a second program. Memo Book also inserts the address of its own machine code in Basic's error vector at $300, to intercept the routine that prints Basic's error messages. This makes Memo Book's index page, instead of the usual Syntax Error message, appear each time you press * and return.

When initialization is complete, a subroutine clears the Basic program area, resets all the pointers and displays Memo Book's index page. You can go on to set up your Memo Book at this point, or, if it's already set up, you can leave the program by pressing Q and return, and load another program. Unless the program you load is unusually long or changes the Basic pointers (which many commercial programs do), you can continue to read and write memos until you turn off your computer.

If a crash forces a reset, you can probably reinitialize Memo Book with SYS 40486. Even if you can't, your entries should be safe, because they're stored out of the way under Basic's ROM.




**Menu of commands from the Memo Book program.**

Nevertheless, when you've made a lot of entries, better safe than sorry—back up your data by saving it to disk.

When you use the program for the first time, you'll have to set up your memo book. To start this process, press F2. Then, at the question "Save This Book?", respond with N, since you don't yet have a book to save. Finally, press return, and the first empty page of your memo book will appear.

If you've already set up a book with data and saved it to disk, this is the time to load it into memory. Press F6 and, at the prompt, type the filename of the book and press return. When the index page appears, use the cursor keys to scroll to the page you want, then press return to display the page on the screen. You can also "flip" through the pages of your book by scrolling. Use the cursor keys to scroll rapidly, or F1 and F7 to scroll slowly. If the number of entries makes scrolling through the pages unwieldy, press return to go back to the index and pop to another page.

Memo Book has relatively few commands to remember, and I've kept those few as intuitive as possible. If you do need to refresh your memory, enter ? to see the Help screen. Also, if you ever issue the wrong command, you can abort it with a return. Commands that affect the entire book must be entered from the index page.

## Inputting Entries

The command for adding entries to your memo book is control/I (for insert). It works whenever the cursor points to an empty line, whether you're starting a new book or adding entries to one that's already established.

After you press control/I, the screen clears, and a red prompt message instructs you to input an entry. The entry can be up to six lines long and 38 columns wide, and you can format it any way you like, with whatever punctuation you find convenient. If one six-line entry isn't enough, continue right below with another. If you have trouble staying within the 38-column limit, the segmented guideline I've provided should help.

Press return at the end of each line, and signal completion of your entry by pressing return on an empty line. You'll find yourself back in the memo book, ►

RUN it right: **C-64**

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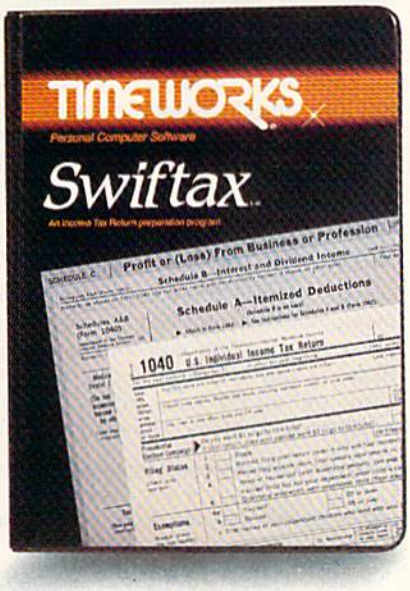


**Features:** Guides you through every step of the tax preparation process with full user prompts, and instructs you on which forms you must complete.

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Sets up a unique Taxpayer File, enabling you to make changes to your completed tax return, at a later date.

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looking at the new entry. When you're adding a lot of new entries, it's wise to save your data frequently.

### Editing Entries

To edit an entry, press control/E. Once again the screen will clear, but this time the entry you want to edit will appear, with a flashing cursor at its first character. Edit one line of the entry at a time, using all the normal keys to insert, delete and overwrite characters. When you finish a line, press return. In fact, you must press return for each line you want to retain, whether you change it or not. Conversely, if you want to eliminate a line, move the cursor to the next line without pressing return.

To insert a new line in an entry, move the cursor to an empty line, type in your data and press return. Then move the cursor back to edit the next line.

When you've finished editing your entry, press return on an empty line to put it back in the memo book.

### Deleting Entries

Control/D, as you might expect, deletes an entry. To prevent accidents, you must confirm by pressing Y that the entry, now highlighted in red, really should be deleted.

### Saving a Book

Press F4 to save a book. When the program asks if you want to update a file, a yes response will scratch the old file, and the book you're currently using will be saved in its place. As I've mentioned, F2 starts a completely new book. Here, also, you have the option of saving the current book first.

A full book occupies about 35 blocks in memory locations $A000–$C000. However, only the portion that actually contains data is saved and reloaded, so no time and disk space is wasted on empty bytes.

### Printing

To print out one entry, press control/P, then, at the prompts, choose to print the entire entry, omit the last line or omit the last two lines. If you keep phone numbers and comments on those lines, you'll want to eliminate them when you print addresses on envelopes or labels.

If you want to print a full page of entries, press F3. Again, you can choose to eliminate lines, and the page will be printed beginning at the cursor position. F5 prints the entire book, with the same options.

### Returning to Basic

When you're done consulting your memo book, if you're on a memo page, press control/Q to quit and return to Basic. If you're on the index page, Q alone will do the same thing. You can jump back to Memo Book from Basic at any time by pressing * and return in Direct mode.

### Multiple Applications

Because it's so unstructured, Memo Book can be used for a variety of purposes simultaneously. It's easy, for example, to add appointments and a list of "things to do" to the top of the first page, under A. If you don't scroll the index, the book will automatically open there, for a quick check of your schedule.

It's equally easy to set up and use several books for different purposes, because Memo Book lets you save one book and load another by just returning to the index and inputting F6. Because the load will obliterate the data you've been working on, the program will ask if you want to save the present book before loading the next one. Responding Y gives you a save routine similar to the one I described earlier.

When that book has been taken care of, you'll be prompted for the name of the book you want to load, and the load will take place. It's a good idea to keep a list of your memo books somewhere in each book, so you don't have to consult the disk directory for the correct names. Ⓡ

*Barbara Mintz is a director of the Boston Computer Society's Commodore user's group and director of software development for Brown Boxes, Inc.*

**Listing 1. Memo Book program. (Note: Checksums are for *RUN*'s new checksum program.)**

```
Ø REM BASIC HEX LOADER FOR RUN
  MEMO BOOK              :REM*184
5 OPEN 8,8,8,"RUN MEMO BOOK,P,W
  "                      :REM*64
1Ø READ A$:IF A$="-1" THEN CLOS
  E8:END                 :REM*78
15 IF LEN(A$)<62 THEN 55
                         :REM*254
2Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
  2Ø)+MID$(A$,43,2Ø)     :REM*242
25 FOR I=1 TO 3Ø         :REM*181
3Ø C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                         :REM*2Ø9
35 H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55              :REM*85
4Ø L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55              :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
                         :REM*67
5Ø NEXT:GOTO 1Ø          :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
  O 7Ø                   :REM*184
6Ø IF LEN(A$)<42 THEN B$=LEFT$(
  A$,2Ø)+RIGHT$(A$,(LEN(A$)-21
  ):GOTO 7Ø              :REM*137
65 B$=LEFT$(A$,2Ø)+MID$(A$,22,2
  Ø)+RIGHT$(A$,LEN(A$)-42)
                         :REM*14Ø
7Ø FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                         :REM*14Ø
8Ø H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55              :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55              :REM*84
9Ø BY=H*16+L:PRINT#8,CHR$(BY);
                         :REM*148
95 NEXT:GOTO 1Ø          :REM*16Ø
1ØØ REM RUN MEMO BOOK FOR THE C
  64                     :REM*15Ø
1Ø1 DATA Ø1Ø8ØCØ832ØØ9E323Ø36 3
  83AØØ12Ø83CØØ8ØØØØ ØØA9948
  5FCA9ØØ85FBA8          :REM*172
1Ø2 DATA A93985FDA9Ø885FEB1FD 9
  1FBC8DØF9E6FEE6FCA5 FCC9AØD
  ØEF4C269EA9Ø6          :REM*182
1Ø3 DATA 8D86Ø2A9Ø18D21DØA941 8
  5FBA94E85FCA2ØØ8E39 Ø3A915A
  Ø952Ø1EABA218          :REM*148
1Ø4 DATA AØØ4182ØFØFFA942AØ95 2
  Ø1EABA2Ø6AØØB182ØFØ FFA93E2
  ØD2FFA5FBE6FB          :REM*247
1Ø5 DATA 2ØD2FFAØ182ØFØFFA93E 2
  ØD2FFA5FCE6FC2ØD2FF E8EØ13D
  ØD818A2ØBAØ1C          :REM*187
1Ø6 DATA 2ØFØFFA935AØ952Ø1EAB A
  2Ø18E3AØ3A2Ø6AØØB4C D3942ØE
  4FFFØFBC989FØ          :REM*222
1Ø7 DATA 6EC98AFØ6DC98BFØ6CC9 1
  1FØ16C991FØ35C93FFØ 63C9ØDD
  ØØ34CFA94C951          :REM*177
1Ø8 DATA DØD84C7996EE3AØ3AE3A Ø
  32Ø6395EØØEFØØFEØ1B DØØ34C6
  6942ØD2FF2Ø6E          :REM*245
1Ø9 DATA 95DØB9A2Ø6AØ184CD394 C
  E3AØ32Ø6395AE3AØ3FØ 12EØØDD
  ØE2A212AØØB18          :REM*144
11Ø DATA 2ØFØFF2Ø6E954C7294A2 1
  A8E3AØ3A212AØ184CD3 944CC89
  D4CDF9C4C629D          :REM*22
111 DATA A9ØØ8D35Ø34C5A9E2Ø94 9
  5ADFFBFCDFEBFDØØ34C 1396Ø9
  B95A977AØ952Ø          :REM*Ø
112 DATA 1EAB4C4F9793ØDØD2Ø2Ø 2
  Ø2Ø2Ø2Ø2Ø2Ø2Ø2Ø2Ø2Ø 1252554
  E2Ø4D454D4F2Ø          :REM*251
113 DATA 424F4F4BØDØDØØ122Ø3F 2
  Ø3D2Ø48454C5Ø2Ø92ØØ 28434F5
  Ø595249474854          :REM*137
```

Circle 182 on Reader Service card.

Space Combat Simulation

# DEEP★SPACE™

## Operation Copernicus

# Deep Space Comes Down To Earth

DATE: 3 JUNE 2123
FROM: COMMAND CENTER TERRA
TO: INTERCEPTOR COMMAND
CODE: EYES ONLY PRIORITY ONE

REPORTED HOSTILE ACTION AGAINST MANNED INSTALLATIONS CONFIRMED STOP
ALL VESSELS PROCEED SOONEST INHABITED SECTORS TROJAN GROUP STOP
EQUIP MAX WEAPONS LOAD STOP
SEEK AND DESTROY ALL UNIDENTIFIED MILITARY CRAFT STOP

THIS IS NOT REPEAT NOT A DRILL STOP
OPERATION CODE STATUS IS RED STOP
BEST LUCK STOP

Acceleration presses you deep into your cushioned seat. The ship's hull resonates to the throb of your fusion engines, creating a deep rumble almost below the range of hearing. Speed climbs swiftly. The rocks of the Asteroid Belt hurtle past your viewports.

Your apprehension grows....

Until now, a scene like this could take place only in your imagination. If you wanted to picture what it would be like to fly — and fight — in deep space, you could only lean back, close your eyes, and dream.

Until now.

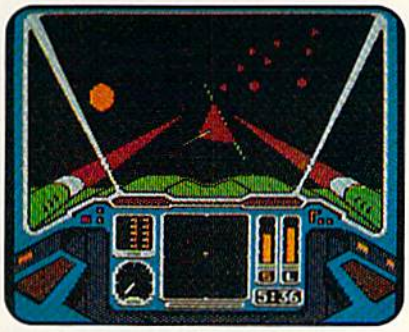
Now there is *Deep Space*. The space-combat simulator that puts you in the pilot's seat with advanced 3D graphics and realistic spaceship behavior, cunningly contrived to work on your down-to-earth personal computer.

Choose from 3 levels of difficulty on each of 4 different missions, each in its own separately mapped sector of the Trojan asteroids. Will you be able to complete your mission and return to land safely on your base planetoid? There's only one way to find out.

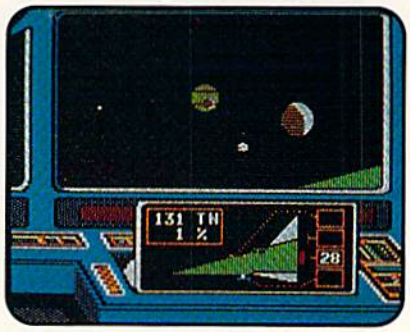
*Deep Space*. It's from Sir-Tech, so you know it performs.

*Look-left Dashboard*

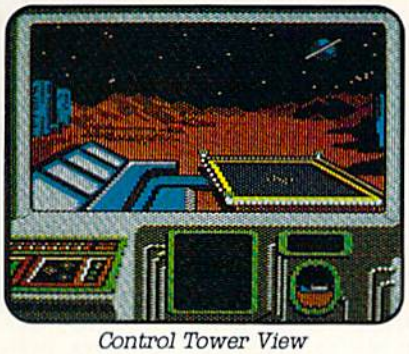
*Forward Dashboard*



*Look-right Dashboard*



*Quadrant Map Display*



*Control Tower View*

*Sample screens taken from the Apple II.*

Available for:
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IBM PC & Compatibles
Commodore 64

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Sir-Tech Software, Inc.
P.O. Box 245, Ogdensburg Charlestown Mall, Ogdensburg, NY 13669

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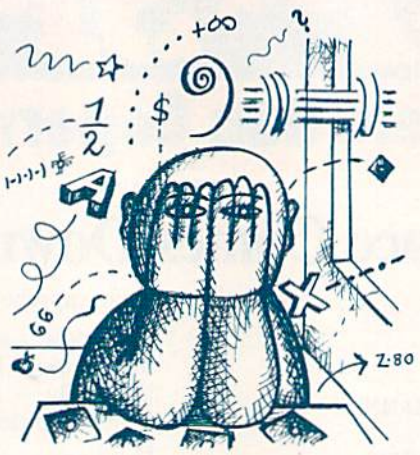
# MEMO BOOK

```
114 DATA 2Ø42524F574E2Ø424F58 4
    5532C494E4320313938 3729ØØ4
    8A4D3B1D1297F          :REM*12Ø
115 DATA 91D1686ØA4D3B1D1Ø98Ø 9
    1D16Ø93ØDØD1C2Ø2Ø4E 4F2Ø424
    F4F4B2Ø494E2Ø          :REM*127
116 DATA 4D454D4F5259ØDØDØDØD 1
    FØØA5Ø129FE85Ø16ØA5 Ø1Ø9FF8
    5Ø16ØAD3AØ3ØA          :REM*149
117 DATA AA6Ø18AD3AØ3694ØDØ15 E
    E3AØ3A2Ø5DØØ9ØDØD2Ø ØØ2Ø129
    3A2Ø6BDB795FØ          :REM*114
118 DATA E32ØD2FFCA1ØF52ØA295 B
    DØ1AØ85FBE8BDØ1AØ85 FCE6FBD
    ØØ2E6FCA9ØØ8D          :REM*2Ø3
119 DATA 34Ø36ØC8C8A92Ø2ØD2FF B
    1FBC82ØD2FFC9ØDDØF6 A92Ø2ØD
    2FFB1FBC9Ø7BØ          :REM*66
12Ø DATA ED8D3BØ3C8B1FB8D3EØ3 A
    9ØD2ØD2FF6Ø2Ø94952Ø BE95AØØ
    ØB1FBFØ21C9FF          :REM*254
121 DATA FØ1DA9ØD2ØD2FF2ØE595 C
    8B1FB3ØØD1865D6C918 BØØ62ØB
    5964C16962ØC4          :REM*156
122 DATA 98A93E2ØD2FFA99D2ØD2 F
    F2Ø6E952Ø9B952ØE4FF FØFBAE8
    EØ2EØØ4DØ28C9          :REM*11
123 DATA Ø9FØ67C9Ø4DØØ34CD999 C
    91ØDØØ34C919BC9Ø5DØ Ø34CEB9
    AC911DØD72Ø9B          :REM*238
124 DATA 95A9932ØD2FF4C74A4C9 1
    1FØ27C991FØ26C9ØDFØ 25C985F
    Ø1EC988FØ17C9          :REM*186
125 DATA 86FØ1ØC987FØØCC93FDØ A
    CA9Ø18D35Ø34C5A9E4C 939B4C7
    8984CE2984CØØ          :REM*152
126 DATA 94AD3EØ31865FB85FBA9 Ø
    Ø65FC85FC6Ø2ØB49AA9 ØØAØ982
    Ø1EABAD3CØ38D          :REM*2
127 DATA 86Ø2A5FB8D3FØ3A5FC8D 4
    ØØ3AØØØ8C3EØ38C3BØ3 84FDA9C
    Ø85FE2Ø6ØA5A2          :REM*195
128 DATA ØØAC3EØ3BDØØØ2FØØD91 F
    DC8EE3EØ3E8EØ26FØØ6 DØEEEØØ
    1FØ14A9ØD91FD          :REM*13
129 DATA EE3EØ3EE3BØ3AE3BØ3EØ Ø
    69ØD1EE3EØ3AD3BØ3DØ Ø34C1Ø9
    6EE3EØ32Ø9495          :REM*251
13Ø DATA AD3EØ38D36Ø31869Ø28D 3
    EØ3186DØ1AØADØ2AØ69 ØØC9CØ9
    Ø192Ø9B95A952          :REM*168
131 DATA AØ982Ø1EABA961AØ982Ø 1
    EAB2ØE4FFFØFB4CØØ94 AØØØB1F
    B8D37Ø3ADØ1AØ          :REM*48
132 DATA 85FBADØ2AØ85FC18A5FB 6
    D3EØ385FD8DØ1AØA5FC 69ØØ85F
    E8DØ2AØAD37Ø3          :REM*153
133 DATA DØØ8E6FBDØ2BE6FCDØ27 A
    ØØØB1FB91FDA5FBCD3F Ø3DØØ7A
    5FCCD4ØØ3FØ13          :REM*2Ø8
134 DATA A5FBDØØ2C6FCC6FBA5FD D
    ØØ2C6FEC6FD4C9Ø97A9 BF85FEA
    9FE85FDAØØØ2Ø          :REM*176
135 DATA F497C8B1FD91FBCC36Ø3 D
    ØF62ØF4972ØA295E8E8 EØ35BØ1
    2BDØ1AØ186D3E          :REM*51
136 DATA Ø39DØ1AØ9ØEEE8FEØ1AØ B
    ØE9A9932ØD2FF4C1696 AD3BØ39
    1FBC8AD3EØ391          :REM*29
```




```
137 DATA FB6Ø93ØD54595Ø452Ø4C 4
    94E452F52455455524E 2D2D454
    E442Ø424C414E          :REM*13Ø
138 DATA 4B2Ø4C494E452F524554 5
    5524EØDB2B2B2B2B2B2 B2B2283
    62Ø4C494E452Ø          :REM*4
139 DATA 3C33382Ø535Ø43533E2Ø 4
    D415829B2B2B2B2B2B2 B2B2ØDØ
    Ø2Ø2Ø424F4F4B          :REM*56
14Ø DATA 2Ø46554C4C21ØDØDØØ2Ø 2
    Ø285Ø52455353204B45 592Ø544
    F2Ø434F4E542E          :REM*65
141 DATA 29ØØAD34Ø3FØ19CE34Ø3 A
    92Ø2ØD2FFAE3BØ3A9ØD 2ØD2FFC
    A1ØFA2ØB5964C          :REM*127
142 DATA 3D96A92Ø2ØD2FFA9ØD2Ø D
    2FF2Ø9495AØØØB1FBFØ ØAC9FFD
    Ø112ØBØ954C3D          :REM*181
143 DATA 96A2Ø18E3AØ32ØB3954C 3
    D962ØE5954C3A96AE3B Ø3A9912
    ØD2FFCA1ØFAA9          :REM*2Ø
144 DATA Ø18D34Ø36ØA5FBDØØ2C6 F
    CC6FBAØØØB1FB6Ø2Ø94 95A5FB8
    D3FØ3A5FC8D4Ø          :REM*222
145 DATA Ø3A92Ø2ØD2FFA99D2ØD2 F
    FAD34Ø3FØ18CE34Ø3A6 D6DØØ92
    Ø6CE92ØBD994C          :REM*133
146 DATA 3D96A9912ØD2FF4C3D96 2
    ØD598C9FFDØ5Ø2Ø3E4 D69Ø1CF
    Ø1ACA8E3BØ32Ø          :REM*194
147 DATA 9B99A9112ØD2FF4C4499 A
    2Ø3A9912ØD2FFCADØF8 6ØA2Ø22
    Ø36992ØB3952Ø          :REM*3Ø
148 DATA 34992ØD598CE3AØ3FØØ3 4
    C3D96A21A8E3AØ3ADØ2 AØ85FCA
    DØ1AØ85FBE6FB          :REM*31
149 DATA DØEAE6FC4C3D968D3EØ3 A
    9Ø18D34Ø32ØD5988D3B Ø338AD3
    FØ3ED3EØ385FB          :REM*23Ø
15Ø DATA AD4ØØ3E9ØØ85FCAD3BØ3 C
    5D69ØØ62Ø9B992ØE595 4CC198A
    E3BØ3E88A38E5          :REM*2Ø5
151 DATA D68D3FØ3A2ØØ8E4ØØ3A2 Ø
    Ø86D62Ø6CE9EE4ØØ3AD 4ØØ3CD3
    FØ39ØEEA5D9Ø9          :REM*77
152 DATA 8Ø85D918A2ØØAØØØ2ØFØ F
    F6Ø4E2F592Ø3F455445 4C45442
    Ø2ØAD34Ø3DØØ3          :REM*141
153 DATA 4C4D962Ø9495A5D68D36 Ø
    32ØB49AAØØØ2ØE595AØ ØCB9CC9
    92ØD2FF881ØF7          :REM*96
154 DATA AD3CØ38D86Ø22ØE4FFFØ F
    BC959FØ14A6D62ØFFE9 AE36Ø3A
    ØØØ182ØFØFF2Ø          :REM*214
155 DATA E5954CC198AE36Ø32ØFF E
    9E8EØ19DØF8AE36Ø3CA 1Ø05A9Ø
    12ØA399AØØØ18          :REM*23
156 DATA 2ØFØFF2Ø469AAØØØ8C34 Ø
    34C1696A5FB85FD8D3F Ø3A5FC8
    D4ØØ385FE2ØB5          :REM*251
157 DATA 96AØØØB1FB91FDC9ØØFØ Ø
    9C8DØF5E6FCE6FEDØEF 38ADØ1A
    ØED3EØ38DØ1AØ          :REM*55
158 DATA BØØ3CEØ2AØADØ1AØ85FD A
    DØ2AØ85FEA9ØØA8C891 FDCC3EØ
    3DØF82ØA295E8          :REM*187
159 DATA E8EØ35BØ1238BDØ1AØED 3
    EØ39Ø1AØBØEEE8DEØ1 AØDØE9A
    D3FØ385FBAD4Ø          :REM*2Ø8
16Ø DATA Ø385FC6ØAD86Ø28D3CØ3 A
    9Ø28D86Ø26Ø93ØDØD2Ø 4849542
    Ø52455455524E          :REM*123
161 DATA 2Ø464F522Ø4541434482Ø 4
    34F5252454354 2Ø4C49 4E45ØDØ
    D45444954ØØAD          :REM*4Ø
162 DATA 34Ø3DØØ34C4D962ØB49A A
    9CØAØ9A2Ø1EABA9Ø6AØ 982Ø1EA
    BAD3CØ38D86Ø2          :REM*8Ø
163 DATA 2Ø9495AD3EØ338E9Ø48D 3
    6Ø3AØØ2B1FB2ØD2FFC8 CE36Ø3D
    ØF5AE3BØ32Ø36          :REM*42
164 DATA 992Ø469A2Ø9B954CD496 Ø
    D3Ø2954524942E542Ø43 4D5Ø4C5
    42Ø454E545259          :REM*138
165 DATA 3FØD31294F4D49542Ø4C 4
    153542Ø4C494E453FØD 32294F4
    D49542Ø4C4153          :REM*66
166 DATA 542Ø322Ø4C494E45533F 2
    Ø2Ø2Ø283Ø2F312F322F 3329Ø3
    FØD3329524554          :REM*165
167 DATA 55524E2Ø544F2Ø494E44 4
    5583FØDØØA9ØØ8D38Ø3 AE3BØ3A
    9112ØD2FFCA1Ø          :REM*173
168 DATA FA2ØB49AA6D68E36Ø3AØ Ø
    Ø8C37Ø32Ø6CE9AE36Ø3 EE37Ø3A
    D37Ø3C9Ø6DØFØ          :REM*67
169 DATA B5D9Ø95Ø95D9A932AØ9B 2
    Ø1EABAD3CØ38D86Ø22Ø E4FFFØF
    B493ØC9Ø4BØF5          :REM*84
17Ø DATA 8D37Ø3C9Ø3DØØ34CØØ94 A
    9ØØ2ØBDFFA9Ø4AAAØØØ 2ØBAFF2
    ØCØFFA2Ø42ØC9          :REM*2Ø1
171 DATA FF2Ø9495AØØØB1FBFØ4C C
    9FFFØ398D3BØ338ED37 Ø38D36Ø
    3A2ØØC8B1FB8D          :REM*41
172 DATA 3EØ3AD36Ø3FØ183Ø16C8 B
    1FB2ØD2FFC9ØDDØF6E8 EC36Ø3D
    ØFØ2ØD2FF2ØD2          :REM*83
173 DATA FFAD38Ø3FØ142ØB596DØ B
    DAE38Ø3EØ86FØØ8E6FB DØB2E6F
    CDØAE2ØCCFFA9          :REM*45
174 DATA Ø42ØC3FF4C1Ø9693ØD53 4
    156452Ø544849532Ø42 4F4F4B3
    F2ØØØØDØD4E45          :REM*237
175 DATA 572Ø424F4F4B2Ø4E414D 4
    53FØDØDØØ93ØD1C4C4F 4144Ø24
    E45572Ø424F4F          :REM*121
176 DATA 4B3F1FØØ93ØD1C535441 5
    2542Ø4E45572Ø424F4F 4B3F1FØ ►
```

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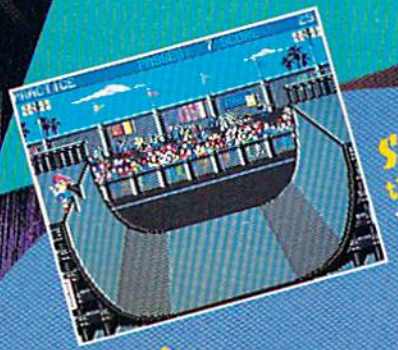

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**Software by**
**David Bunch, Michael Kosaka, Stephen Landrum**

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Circle 142 on Reader Service card.

```
    ØAØFFE8C8B9ØØ       :REM*233
177 DATA Ø29D41Ø3DØF68AA241AØ Ø
    32ØBDFF6Ø533Ø3A1CØD ØD53435
    241544348204F       :REM*214
178 DATA 4C442Ø46494C453F2Ø1F Ø
    ØØD4E414D453FØDØØA2 ØØ8E37Ø
    34C799DA9CØAØ       :REM*146
179 DATA 9C2Ø1EAB2ØE4FFFØFB2Ø D
    2FF48A9D7AØ9C2Ø1EAB 2Ø6ØA56
    8C94EFØ23C959       :REM*216
18Ø DATA FØØ34CE79CA2FFE8BDBD 9
    C9D41Ø3EØØ2DØF52ØA8 9CAØ6FA
    9Ø1A2Ø82ØBAFF       :REM*252
181 DATA 2ØD5F3A2FF2ØA89CA9Ø2 A
    8A2Ø82ØBAFF2Ø9495A9 Ø185FDA
    9AØ85FEA9FDAC       :REM*217
182 DATA Ø2AØAEØ1AØE8DØØ1C82Ø D
    8FF2Ø9B95AE37Ø3EØØ1 FØØ5BØ3
    74CØØ944CE39D       :REM*16Ø
183 DATA A981AØ9C2Ø1EAB2ØE4FF F
    ØFBC959FØØ2DØE8A2Ø2 8E37Ø3A
    95BAØ9C2Ø1EAB       :REM*4
184 DATA 2ØE4FFFØFB2ØD2FFC94E F
    ØC7C959DØE94CE79CA9 6EAØ9C2
    Ø1EAB2Ø6ØA5A2       :REM*26
185 DATA FF2ØA89CA9Ø2A8A2Ø82Ø B
    AFF2Ø9495A9ØØAAAØAØ 2ØD5FFB
    ØØ4CØCØ9ØØ34C      :REM*119
186 DATA 2Ø9E84FC8AA8A9ØØ85FB F
    Ø4BA994AØ9C2Ø1EAB2Ø E4FFFØF
    BC959FØØ34CØØ       :REM*9
187 DATA 94A9Ø18D37Ø34C799D2Ø 9
    495A9AØ85FCA9ØØ85FB AØØ1A95
    Ø91FBA9AØA237        :REM*43
188 DATA C891FBC8488A91FB68E8 C
    8CØ379ØF288A9FF91FB C8CØ51D
    ØF9A9ØØ91FBC8       :REM*251
189 DATA DØFBE6FCA6FCEØCØDØF3 2
    Ø9B954CØØ94A9FF8537 A993853
    8ADØØ38D589E        :REM*74
19Ø DATA ADØ1Ø38D599EA94A8DØØ Ø
    3A99E8DØ1Ø32Ø44A64C ØØ94EØØ
    BDØØ7C92CDØØ3       :REM*43
191 DATA 4CØØ946C589EØØØØA97F A
    Ø9E2Ø1EABA93FAØ9F2Ø 1EABA96
    1AØ982Ø1EAB2Ø       :REM*87
192 DATA E4FFFØFBAD35Ø3FØØ34C 1
    Ø964CØØ9493ØDØD1249 4E44455
    82Ø5Ø41474592       :REM*211
193 DATA ØDØD2Ø2Ø2Ø435552534F 5
    22Ø555Ø2F444F574EØD 2Ø2Ø2Ø5
    2455455524E2Ø       :REM*111
194 DATA 53454C4543545320 4D45 4
    D4F2Ø5Ø4147450D2Ø2Ø 2Ø12519
    22Ø544F2Ø5155       :REM*4Ø
195 DATA 4954ØDØD2Ø2Ø2Ø2Ø2Ø46 3
    2292Ø494E5354414C4C 2Ø424C4
    14E4B2Ø424F4F       :REM*45
196 DATA 4BØD2Ø2Ø2Ø2Ø2Ø463429 2
    Ø53415645 2Ø424F4F4B ØD2Ø2Ø2
    Ø2Ø2Ø46362920       :REM*151
197 DATA 4C4F41442Ø4E45572Ø42 4
    F4F4BØDØD494E535441 4C4C2Ø4
    24F4F4B2Ø4245       :REM*38
198 DATA 464F52452Ø53454C4543 5
    4494E472Ø4D454D4F2Ø 5Ø41474
    5ØDØDØØ124D45       :REM*243
199 DATA 4D4F2Ø5Ø4147455392ØD Ø
    D2Ø2Ø52455455524E2Ø 53454C4
    5435453 2Ø494E      :REM*14
2ØØ DATA 4445582Ø5Ø4147450D2Ø 2
    Ø2Ø12434E54524C923A 2Ø12499
    24E534552542Ø       :REM*4Ø
2Ø1 DATA 12459244495420124492 4
    54C4554452Ø125Ø9252 494E542
    Ø125192554954       :REM*192
2Ø2 DATA ØDØD2Ø2Ø2Ø2Ø46312F 4
    6372Ø3D2Ø435552534F 522Ø555
    Ø2F444F574EØD       :REM*227
2Ø3 DATA 2Ø2Ø2Ø2Ø4633292Ø5Ø 5
    2494E542Ø5Ø41474520 46524F4
    D2Ø435552534F       :REM*127
2Ø4 DATA 52ØD2Ø2Ø2Ø2Ø463529 2
    Ø5Ø52494E542Ø424F4F 4B2Ø465
    24F4D2Ø435552       :REM*141
2Ø5 DATA 534F52ØDØDØØ  :REM*1Ø5
2Ø6 DATA -1            :REM*6Ø ■
```


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Circle 115 on Reader Service card.

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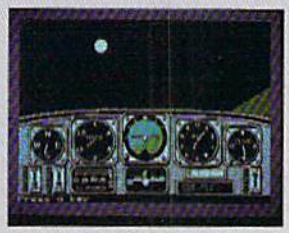

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# Calendar Maker

*Make some dates with your Commodore and get 1988 off to a good start.*

JANUARY - 1988
SUN MON TUE WED THU FRI SAT
1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31
1. EDIT A MEMO
2. CANCEL MEMO
3. PRINT CALENDAR
4. NEW CALENDAR
5. QUIT
SELECT (1-5)

**Sample Calendar Maker screen display.**

By BOB KODADEK

Let's start off the New Year with a seasonally appropriate application that most Commodore owners can enjoy—a C-64/C-128 calendar program. Calendar Maker employs a perpetual calendar to display and print out any month of any year you choose.

You can use it to create a 1988 calendar or to look into the future or the past to find out the day of the week of a particular event. Want to know if your birthday will fall on a weekend in the year 2001? Calendar Maker can promptly tell you.

The program can also help you organize your monthly schedule. For each day of the month you can enter up to six memos, each containing a maximum of ten characters. As the calendar is displayed on the screen, any date containing memos appears in reverse video, so you can easily select it to view, edit or delete the memos. All memos appear under the correct date when the calendar is printed.

## Creating a Calendar

Type in and save Listing 1, being careful to include the semicolons in the Print and Print# statements. They suppress unwanted carriage returns, and if you inadvertently omit one, the ensuing text will appear on the line following where it should be. (Of course, this holds true for any Basic program listing you type into your Commodore.)

To use Calendar Maker, just load and run the Basic program. It will request the month and year of the calendar you want displayed and check to make sure your responses are in the proper range. You must enter the year as a four-digit number—such as 1988.

When the calendar you requested appears, it'll be accompanied by a menu with the following choices:

1. Edit a memo
2. Cancel a memo
3. Print a calendar
4. New calendar
5. Quit

Each time you elect to edit or cancel a memo, Calendar Maker will prompt you to enter the date of that memo and make sure your input is in the correct range. The range is displayed in the prompt. Note that, since 1988 is a leap year, the range for February is 1–29.

If you choose to edit a memo, a block representing the date and containing six numbered lines will appear in reverse video, with any memos you've already input for that date displayed and the cursor poised on line 1. Enter or edit up to ten characters in line 1, remembering to enclose the text in quotes if it includes a comma or colon. (The quotation marks aren't counted in the ten characters.) When you're done with line 1, press the return key to advance to line 2. If you fail to press return, an error will occur.

You can enter text on each of the six lines, and the lines can constitute separate memos or all be part of one. Should you need fewer than six lines, just press return at each number to advance to the end of the list. When you press return on line 6, the program will redisplay the lines and ask if they're all right. If you need to make corrections, press N.

Once you press Y, the calendar will appear again with the memo date in reverse video, showing that a memo exists in that spot. Then you can move on to enter or edit memos for other dates or choose a different menu option.

To cancel all the memo lines for a day, select the Cancel option in the main menu.

## Printing a Calendar

When you're ready to print your calendar, turn on your printer and adjust the paper so the print head is one or two lines down from the top. Then select the Print Calendar option from the menu. The print routine is fairly universal, so it'll probably work on your printer.

If you'd like to alter the appearance of the printout, you can make your own substitutions for the CHR$(221) in line 60, which creates the vertical lines, or the CHR$(45) in line 90, which creates the horizontals.

It's also possible to alter the dimensions of the calendar by changing the number of lines printed per inch. If you have a Commodore 1526 or MPS-802 printer, try adding the following line ►

---

RUN it right: **C-64; C-128 (in 40- or 80-Column mode); printer optional**

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ELECTRONIC ARTS®

to the Basic listing to change the line spacing:

```
455 OPEN 5,4,6:PRINT#5,CHR$(23):
    CLOSE 5
```

This change remains in effect until your printer is turned off or reset. If you don't have one of these printers, check your manual to see if and how you can make line-spacing modifications.

To erase the calendar in memory and create another, select the New Calendar option from the main menu. When you are ready to exit the program, choose the Quit option. R

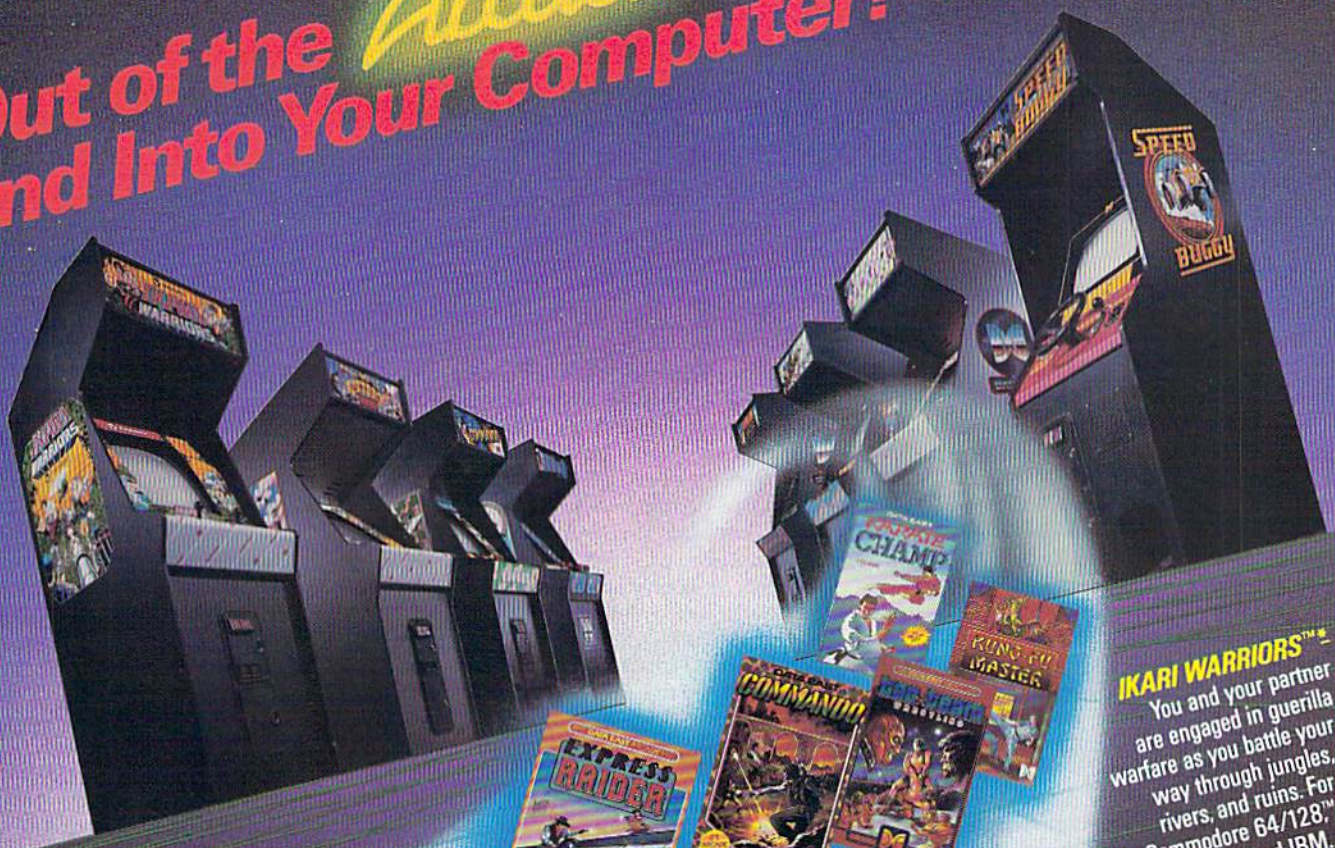
*Bob Kodadek is a computer programmer and freelance writer.*

**Listing 1. Calendar Maker program. (Note: Checksums are for *RUN*'s new checksum program.)**

```
1Ø REM CALENDAR MAKER    :REM*77
2Ø REM BY: BOB KODADEK :REM*116
3Ø REM 3164 SURREY LANE:REM*2ØØ
4Ø REM ASTON, PA 19Ø14 :REM*2ØØ
5Ø :                     :REM*1Ø8
6Ø DIM MO$(12),ND(12),MM(5Ø),XM
   $(5Ø,5):U$=CHR$(221):REM*227
7Ø FOR I=1TO12:READ MO$(I),ND(I
   ):NEXT                :REM*45
8Ø FOR I=ØTO6:READ D$:DY$=DY$+D
   $+"{2 SPACEs}":PD$=PD$+D$+"{
   3 SPACEs}":NEXT       :REM*2Ø2
9Ø FOR I=ØTO9:S$=S$+" ":NEXT:FO
   R I=ØTO77:H$=H$+CHR$(45):NEX
   T                     :REM*127
1ØØ US$=U$+S$:PRINT"{SHFT CLR}{
   2 CRSR DNs}RUN - CALENDAR M
   AKER":PRINT:GOSUB 59Ø:REM*Ø
11Ø GOSUB 69Ø            :REM*2Ø8
12Ø GOSUB 33Ø:K=VAL(A$):IF K<1
   OR K>5 THEN 12Ø       :REM*2Ø4
13Ø IF K=4 THEN PRINT"{SHFT CLR
   }ONE MOMENT...":RUN:REM*1Ø3
14Ø IF K=5 THEN END      :REM*2Ø8
15Ø ON K GOSUB 18Ø,38Ø,43Ø:GOTO
   11Ø                   :REM*228
16Ø :                    :REM*218
17Ø REM ----- EDIT MEMOS -----
                         :REM*6Ø
18Ø GOSUB 3ØØ            :REM*245
19Ø PRINT"{SHFT CLR}{2 CRSR DNs
   }MEMOS FOR "MO$(MO)DT
                         :REM*86
2ØØ PRINT"{CRSR DN}{3 SPACEs}>-
   ---------<{2 SPACEs}1Ø CHAR
   ACTERS EACH":GOSUB 27Ø
                         :REM*116
21Ø PRINT"{7 CRSR UPs}":FOR I=Ø
   TO5:INPUT"{2 CRSR RTs}";X$:
   X$=LEFT$(X$,1Ø)       :REM*122
22Ø IF LEN(X$) <1Ø THEN X$=X$+C
   HR$(32):GOTO 22Ø      :REM*157
23Ø XM$(DT+J,I)=X$:NEXT:PRINT
                         :REM*5
24Ø GOSUB 27Ø:PRINT"{CRSR DN}IS
    THIS CORRECT? (Y OR N)"
                         :REM*19
25Ø GOSUB 33Ø:IF A$ <> "Y" THEN
    19Ø                  :REM*21Ø
26Ø RETURN               :REM*147
27Ø FOR I=ØTO5:IF XM$(DT+J,I)="
   " THEN XM$(DT+J,I)=S$
                         :REM*163
28Ø PRINT I+1 SPC(1) CHR$(18) X
   M$(DT+J,I):NEXT:RETURN
                         :REM*1ØØ
29Ø :                    :REM*93
3ØØ PRINT"ENTER MEMO DATE{2 SPA
   CEs}1 -"ND(MO):INPUT DT
                         :REM*16
31Ø IF DT <1 OR DT >ND(MO) THEN
    PRINT"{3 CRSR UPs}":GOTO 3
   ØØ                    :REM*182
32Ø MM(DT)=1:RETURN      :REM*81
33Ø :                    :REM*133
34Ø A$="":GET A$:IF A$="" THEN
   33Ø                   :REM*94
35Ø RETURN               :REM*237
36Ø :                    :REM*163
37Ø REM ------ CANCEL MEMO ----
   --                    :REM*85
38Ø GOSUB 3ØØ:MM(DT)=Ø:FOR I=ØT
   O5                    :REM*69
39Ø XM$(DT+J,I)=S$:NEXT:REM*2Ø9
4ØØ RETURN               :REM*28
41Ø :                    :REM*213
42Ø REM ------ PRINT CALENDAR -
   -----                 :REM*127
43Ø PRINT"{SHFT CLR}{3 CRSR DNs
   } TURN ON PRINTER":PRINT"{C
   RSR DN}READY? (Y OR N)"
                         :REM*194
44Ø GOSUB 33Ø:IF A$ <> "Y" THEN
    RETURN               :REM*1Ø1
45Ø CLOSE 4:OPEN 4,4:C=Ø:C1=1:N
   =Ø                    :REM*117
46Ø L=LEN(MO$(MO))/2:PRINT#4,CH
   R$(14) SPC(16-L) MO$(MO)" -
   " YR                  :REM*22
47Ø PRINT#4,CHR$(13) CHR$(13) C
   HR$(14)LEFT$(PD$,39):PRINT#
   4,CHR$(15):PRINT#4,H$
                         :REM*166
48Ø FOR I=1TOY:FOR T=ØTO6:C=C+1
                         :REM*19
49Ø IF C=<J OR N=>ND(MO) THEN P
   RINT#4,US$;:GOTO 52Ø:REM*88
5ØØ N=N+1:N$=" "+MID$(STR$(N),2
   )                     :REM*145
51Ø PRINT#4,LEFT$(US$,7)CHR$(14
   )RIGHT$(N$,2)CHR$(15);
                         :REM*248
52Ø NEXT T:PRINT#4,U$    :REM*18Ø
53Ø FOR T1=ØTO5:FOR T2=ØTO6
                         :REM*173
54Ø IF XM$(C1+T2,T1)=""THEN PRI
   NT#4,US$;:GOTO56Ø     :REM*7
55Ø PRINT#4,U$+XM$(C1+T2,T1);
                         :REM*46
56Ø NEXT T2:PRINT#4,U$:NEXT T1:
   C1=C1+7:PRINT#4,H$    :REM*9
57Ø NEXT I:PRINT#4:CLOSE 4:RETU
   RN                    :REM*68
58Ø :                    :REM*124
59Ø REM ------ GREGORIAN DATE -
   -----                 :REM*43
6ØØ INPUT"ENTER MONTH (1-12)";M
   O:IF MO <1 OR MO>12 THEN PR
   INT"{2 CRSR UPs}":GOTO6ØØ
                         :REM*194
61Ø INPUT"ENTER{2 SPACEs}YEAR (
   YYYY)";YR:IF YR <1583 THEN
   PRINT"{2 CRSR UPs}":GOTO61Ø
                         :REM*147
62Ø Q=YR+(MO<3):J=INT(275*MO/9)
   -INT((7*Q+7)/4)+367*YR+1-IN
   T((INT(Q/1ØØ)+1)*3/4)
                         :REM*189
63Ø J=J-4-7*INT((J-4)/7):X=(ND(
   MO)+J)/7:Y=INT(X):IF X>Y TH
   EN Y=Y+1              :REM*62
64Ø IF(YR/1ØØ)-INT(YR/1ØØ)=Ø AN
   D (YR/4ØØ)-INT(YR/4ØØ)<>Ø T
   HEN RETURN            :REM*19
65Ø IF (YR/4)-INT(YR/4)=Ø AND M
   O=2 THEN ND(MO)=29 :REM*134
66Ø RETURN               :REM*33
67Ø :                    :REM*218
68Ø REM ----- PRINT SCREEN ----
   -                     :REM*167
69Ø L=LEN(MO$(MO))/2:PRINT"{SHF
   T CLR}"SPC(16-L) MO$(MO)" -
   " YR                  :REM*2Ø7
7ØØ PRINT:PRINT SPC(3) DY$:PRIN
   T:C=Ø:N=Ø             :REM*41
71Ø FOR I=1TOY:FOR T=1TO7:C=C+1
   :IF C=<J THEN PRINT SPC(5):
   GOTO 75Ø              :REM*2
72Ø IF N=>ND(MO) THEN 75Ø
                         :REM*192
73Ø N=N+1:N$=" "+MID$(STR$(N),2
   ):IF MM(N) THEN PRINT CHR$(
   18);                  :REM*176
74Ø PRINT SPC(3) RIGHT$(N$,2) C
   HR$(146);             :REM*147
75Ø NEXT T:PRINT:PRINT:NEXT I
                         :REM*13
76Ø PRINT"1. EDIT A MEMO":PRINT
   "2. CANCEL MEMO":PRINT"3. P
   RINT CALENDAR"        :REM*88
77Ø PRINT"4. NEW CALENDAR":PRIN
   T"5. QUIT"            :REM*116
78Ø PRINT"{CRSR DN}SELECT (1-5)
   ":RETURN              :REM*1ØØ
79Ø :                    :REM*83
8ØØ DATA JANUARY,31,FEBRUARY,28
   ,MARCH,31,APRIL,3Ø,MAY,31,J
   UNE,3Ø,JULY,31        :REM*217
81Ø DATA AUGUST,31,SEPTEMBER,3Ø
   ,OCTOBER,31,NOVEMBER,3Ø,DEC
   EMBER,31              :REM*93
82Ø DATA SUN,MON,TUE,WED,THU,FR
   I,SAT                 :REM*48
```

■

# Out of the Arcade and Into Your Computer!

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# GEOWATCH

*Advice on using printers and the 1581 disk drive with GEOS highlights this month's column.*

By MATTHEW STERN

THE GEOWATCH MAILBAG has been overflowing, with most of the questions concerning hardware, especially printer, compatibility. Answering is difficult, because of the variety of printers available, all of which work somewhat differently. However, I do have some general suggestions.

First, use printers and interfaces that have been proven compatible by Berkeley Softworks, the developer of GEOS. You'll find a list in your *GEOS User's Guide* and in last August's geoWatch.

Second, make sure your interface is set correctly. Printer interfaces are normally configured with DIP switches. For my Epson RX-80, I turn the automatic linefeed off and Transparent mode on, and I set the device number to 4.

Finally, use the correct printer driver. There are now three sets of printer drivers for GEOS: the original set that comes with the boot disk, an enhanced set that comes with Writer's Workshop and a special set for the geoPrinter Cable. If you're using Writer's Workshop and some of the newer GEOS applications, you need the new drivers; the original ones on the boot disk won't work. If you're using the geoPrint Cable, use a driver with a filename ending in (GC). Copy the driver so it's the first file on the boot disk, and it'll be selected automatically when you start GEOS.

Now, for some questions:

**Q** *I'd appreciate answers to the following questions relating to GEOS: 1. Besides using the space bar (which is slow), is there any way to position the cursor beyond the last character in a line, for purposes like placing the return address in the upper-right portion of a letter. Also, is there a quick way to set the cursor? 2. When bringing a graphic into a geoWrite file, I've noticed that it's always centered horizontally and that only one graphic can be placed on the line. Can I change its position, and is it possible to locate more than one graphic on a line?*

—S. E. FELLERMAN
KENSINGTON, MD

**A** To move the cursor within a line of existing text, you can either move the pointer to the desired location and click, or, with geoWrite version 1.3 or later, use the cursor keys. Pressing control/I moves the cursor beyond the last character to the next tab stop. GeoWrite positions a pasted-in photo scrap between the margins, and, by moving the margins, you also move the graphic. If you want a graphic to be flush left, move the right-margin icon to the left until the graphic is in the correct position. Changing the margins reformats all the text below the ruler. Writer's Workshop lets you use various margin settings in your document. With geoWrite 1.2 and 1.3, you have to use the same settings throughout.

With geoWrite, you can have only one photo scrap in a line. However, you can have a second picture or some text alongside a graphic if it's in the same geoPaint file and included as part of the photo scrap. For laser-printed quality, use the overlay feature in the Writer's Workshop geoLaser program.

**Q** *I just updated my system from a C-64/1541 combination to the C-128/1581, and I noticed rather quickly that it's impossible, using any copy program, to transfer the GEOS boot disk over to the micro-floppies. Not only that, even the latest GEOS update (from the mouse package) doesn't let me take advantage of two disk drives. I hope you can answer the following questions concerning these problems: 1. Is any form of GEOS compatible with the 1581 drive? 2. If I update my boot disk to 128 mode, will it work on a 1541 drive, or must I change over to a 1571? 3. Is GEOS going to be made available on micro-floppies?*

—JOSEPH C. HAMPTON, JR.
JERSEY CITY, NJ

**A** The GEOS 128 with deskTop 1.4 is the only version that supports the 1581 drive. With GEOS 128, you get two 5¼-inch boot disks that run on the 1541 or 1571. There's no 3½-inch boot disk available now, and Berkeley hasn't announced any plans to offer one.

In the meantime, you can use your 1581 as a second disk drive with GEOS. Set your 1541 or 1571 as device 8 (which will appear as drive A on the deskTop) and your 1581 as device 9 (drive B). Boot with the original GEOS disk in the 5¼-inch drive, and use the 128 Configure program on the original disk to check and save your disk drive configuration. As formatted by GEOS, 3½-inch disks can store up to 790K, which provides plenty of space for files, fonts and applications.

You need to be aware of a few things as you use 3½-inch disks with GEOS. First, it doesn't support partitions. If you partition a 3½-inch disk with Basic, it won't convert properly to GEOS format. Second, you can't copy a 5¼-inch disk directly to a 3½-inch disk. Instead, you must copy files individually by dragging them to the disk icon. (You don't have to swap disks while doing this, which is the beauty of having two drives.)

Use a good quality double-sided, double-density 3½-inch disk. (I prefer Sony MFD-2DDs.) They may cost more than single-sided disks, but I find them more reliable.

The 1581 drive is considerably faster than the 1541 and 1571. In spite of some limitations, its speed and storage capabilities make it an excellent enhancement for GEOS.

Thanks to all of you who've taken the trouble to write; I appreciate your questions and comments. In next month's column, I'll take a look at the latest third-party GEOS software and hardware. Keep watching! ■

*The monthly geoWatch column addresses the needs of* RUN *readers who use GEOS, Berkeley Softworks' alternative operating system for the C-64 and C-128. Your questions and comments are welcome. Send them to:*

Matthew Stern
geoWatch
RUN Magazine
80 Elm St.
Peterborough, NH 03458

*You can also contact Matthew Stern on QuantumLink. His online name is Matt S3.*

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**ENTROPY – $29.95**
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? ? ? ? ? ? ? (The Hitchhiker's Guide to Galaxian Software)

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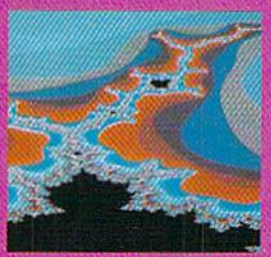

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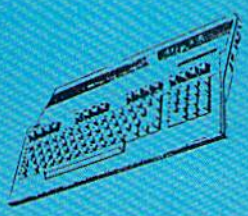

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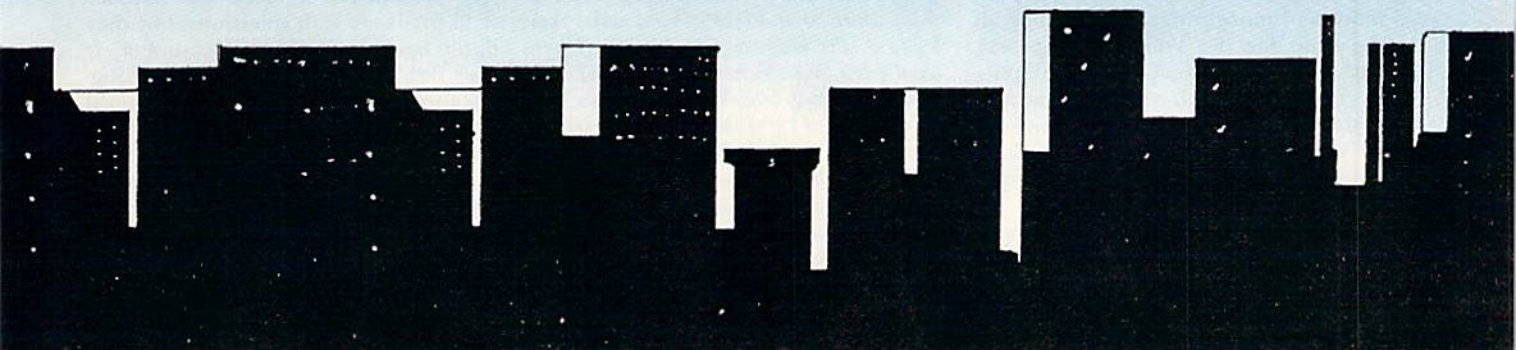


# TELECOMPUTING WORKSHOP

*This month: interfacing a C-64 and a Macintosh through a modem, uploading difficulties with Xmodem, and more.*

By DAVID BRADLEY

HAPPY NEW YEAR, EVERYONE! As we enter 1988, one of my fondest wishes is that the FCC doesn't decide to make online systems like QuantumLink and PeopleLink too expensive to be used by we the people.

I've received many letters relating to my answer in last September's issue to Jake Stack, who was having trouble getting his VicModem 1600 to work.

Jim Stevens from Sanford, North Carolina, reports that if you have a "newer" phone system and you follow the instructions in the modem manual (disconnect the cord from the handset and plug it into the modem after you hear a carrier), you'll never get onto a BBS, because the phone system will hang up as soon as you disconnect the cord.

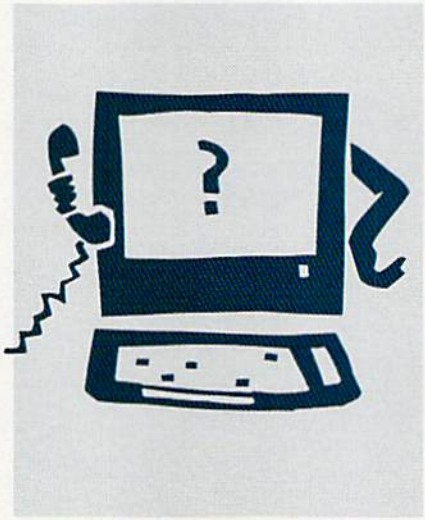
Marvin Forman of Jackson, Michigan, thinks the 1600 may not work with electronic phones.

John Riederer of Streamwood, Illinois, suggests that Jake run an experiment by pretending a friend's phone is a BBS. When the friend answers, Jake can disconnect his handset as if he were calling a BBS, then plug it back in as if the handset were the modem. If he hears a dial tone, that's because when the caller disconnects, even for an instant, the phone hangs up.

John continues, "I realize that some modems are cheaper, but remember, you get what you pay for. I used to own a VicModem, but now I have the Volks 6480. However, I'm not happy with that, either, because it's not compatible with any software (to my knowledge) other than the software packed with it. I hear that Anchor has a new program for it. I wish they'd given us that one in the first place!"

In response to John's letter, there are more and more programs available all the time for the Volks 6480/Aprotek 12C. I'm now aware of four or five public domain and shareware programs that work with it. Of course, I know of 30 or more that work with the Commodore 1650 and at least 25 that work with the 1670.

Now for this month's questions and answers:



**Q** *I was just reading your article "Plug into Telecommunications" in last September's issue of* RUN, *in which you stated that the Volks 6480 isn't easy to use. Boy, are you wrong! My Volks came with Commterm 64, and it holds up to 30 BBS phone numbers. I use it to talk to friends and BBSs with no problem at all.*

—MARVIN AUERBACH
NEW YORK, NY

**A** I'm glad you're enjoying your modem and telecomputing, but many people have had a lot of trouble with the Volks 6480/Aprotek 12C when they've tried to use other software with it. As I've said before, it is a fine modem; it just doesn't work like any others, so you're limited when it comes to software.

**Q** *I own a C-64 and a MasterModem, which is a 110/300-baud unit from Video 7. I'm ready to dive into the 1200-baud craze, but I'm not ready to spend the money on a new modem. I know I can run my computer at 1200 baud via programming, and I'm not worried about the software for the modem, because I can write my own. I can also do circuitry work, as I've built my own memory expanders before. Is it feasible to disassemble the housing on my modem (at my risk of course) and change the circuitry to operate at 1200 baud?*

—EARL BUCKELAW
SIOUX FALLS, SD

**A** I think you'll find there's more to making your modem operate at 1200 baud than making slight changes in the circuitry. The company that manufactures the Pocket Modem (a Commodore 1650 clone) offers an upgrade service for their 300-baud model to 300/1200-baud. From what I've heard, the operation involves removing one chip and replacing it with an entirely different circuit board that plugs into the empty socket. They may be able to offer some help or guidance with your project. Contact Bot Engineering, 7393 Twiss Rd., Campbellville, Ontario, Canada L0P 1B0; 416-876-4301.

I'm not saying that what you want to do can or cannot be done; just about anything is possible. However, you may find that the parts and time involved in converting your modem may make the project more expensive than picking up another unit like the 1670, which now sells in a lot of places for less than $150.

**Q** *I'd like to get into telecommunications and join Q-Link, but I live in a small town and the nearest Q-Link outlet is 50 miles away. The long-distance phone bills would be much more than I could afford. Does Q-Link have a toll-free log-on number for all of us who don't live near a large city, or do they plan on providing this service? I think if they did, they'd attract many more patrons.*

—ANDY SWENSON
WHITEHALL, WI

**A** Q-Link has a voice 800 number for users with questions, but they don't have an 800 log-on number. If they did, they'd have to pay the long-distance phone bills, and then they'd have to turn around and charge a lot more for access via the 800 number. That would probably cost you just as much as, if not more than, the present system.

I suggest that, if you want to get into ►

# Adventure Gamers Applaud *Pirates!*

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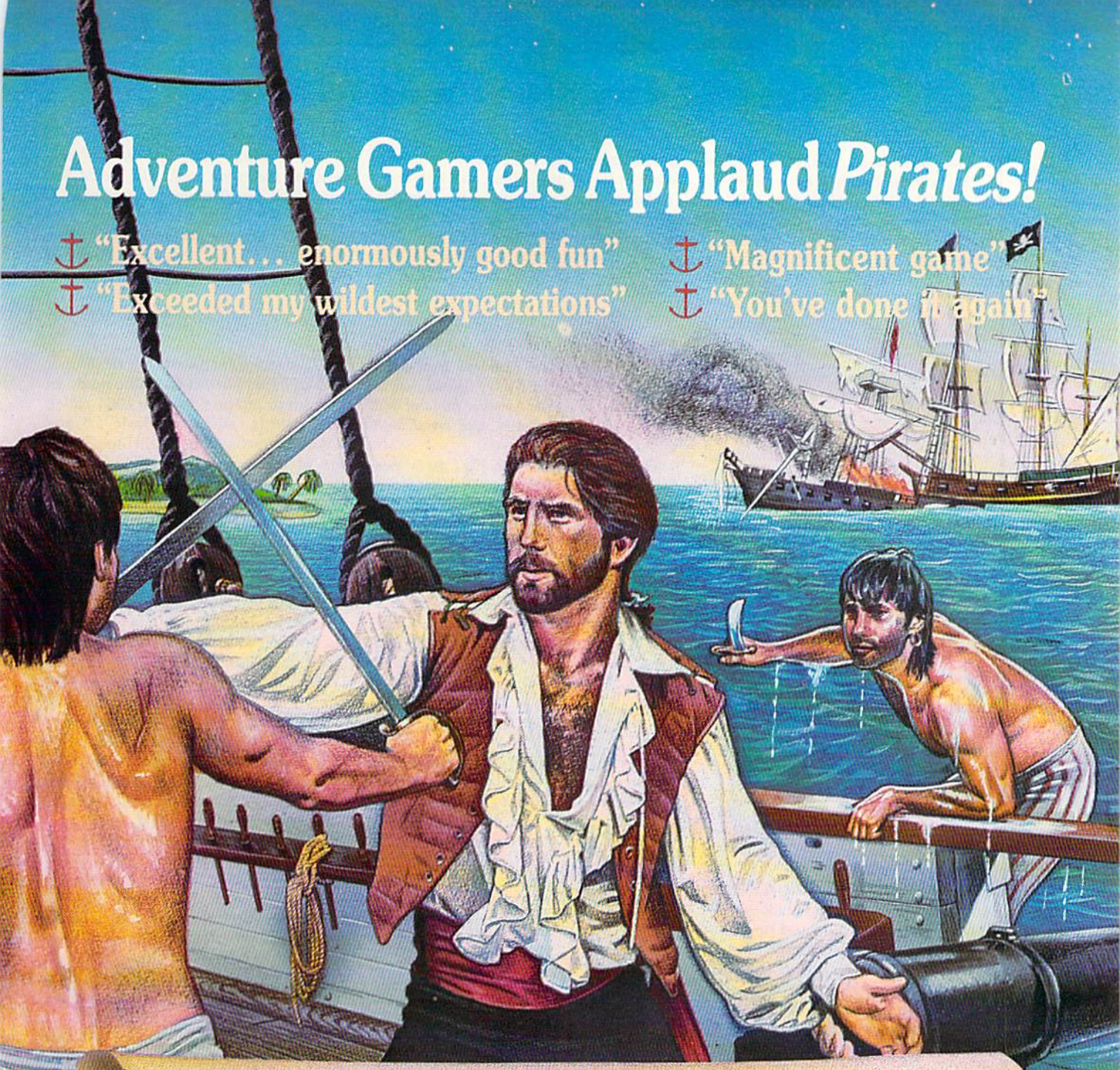

"**PIRATES!** *is excellent... a great swashbuckling game,* **enormously good fun**... *it should keep you playing for months.*"
**(Popular Computing Weekly, U.K.)**

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telecommunications, you get a modem and use a local bulletin board system. You can get a lot out of a free BBS.

If there isn't a BBS in your area but you have a friend in that large city, perhaps you could occasionally take your computer and modem to visit him or her for a day.

*Q I have a C-64 and am planning to get an Apple Macintosh, too. When I have both machines, I'd like to interface them through a modem. Will that be possible, and if so, will I be able to transmit at 2400 baud? Also, my father works for a company that makes modems for the Macintosh and the IBM-PC. Would one of those work with my Commodore?*

—MARK ZELLER
DUNSTABLE, MA

A Interfacing the C-64 and the Macintosh by modem should be possible, but you will need an RS-232 interface for both machines. The Macintosh comes with an RS-422 interface, which is just a souped-up version of the RS-232. You can get an RS-232 interface for your C-64 from Aprotek (1071-A Avenida Acaso, Camarillo, CA 93010; 805-987-2454) or Omnitronix (760 Harrison St., Seattle, WA 98109; 206-624-4985). You could also build one following the instructions in the November 1987 issue of *The Transactor* (501 Alden Rd., PO Box 3250, Markham Industrial Park, Markham, Ontario, Canada L3R 9Z9).

Another alternative would be to buy a Commodore-specific modem, like the Commodore 1670 or the TCM-1200H (a Hayes clone with a Commodore-ready interface from Trans Com, Inc., 703-13 Annoreno Drive, Addison, IL 60101; 312-543-9055) and an interface for connecting it to any computer with an RS-232 port. Write to LRA Enterprises (35615 Ave. D, Yucaipa, CA 92399) for more information about this RS-232-to-Commodore interface. You should choose a modem that will go directly to the computer you'll use most for telecommunicating.

If the company your father works for makes modems with an RS-232 port, they should have one that you can use with your computers. Internal modems, which plug into a slot inside the computer, might not work, but from what I've seen, most companies make both internal and external units.

I'd suggest you get a 2400-baud modem, if your particular C-64 can communicate that fast and you can afford it. The Macintosh can handle that speed, and, while 2400 baud isn't used extensively in the home market now, it's becoming more and more popular all the time. Even if you get a modem that supports 2400 baud but can't use it right away, you'll be ready when everybody else moves up to that speed.

*Q I own a C-128, a 1571 disk drive and a 1670 modem. I can call local BBSs with no problem, but I can't upload files to them. When I use the Xmodem protocol and try uploading, my modem stops about halfway through the file.*

*The read channel to the 1571 stays open (green light on, no flashing), the DIP switches on the back of my 1670 are set correctly, and I establish Xmodem with each BBS before I send. I've tried to upload to several BBSs running on various machines (IBM, Commodore and TRS-80), but the transfer stops half-way through the file every time. The SYSOPs say there's nothing wrong at their end.*

*What might be wrong with my 1670, and how might I fix it? The 1670 manual is no help.*

—GREG GILES
TYLER, TX

A I could answer your question better if you'd given me more information, such as the name of the terminal program you're using, but I'll do my best. Before you blame your modem, try a different terminal program. If you're using Common Sense (the program Commodore sends with the 1670), you might switch to a public domain program such as Third Term or Multi-Term. Both are popular, and you should be able to find them in the TPUG section of Q-Link, from your local user's group or perhaps on a local BBS. To be quite honest, I'm not a big fan of Common Sense. I think Commodore could have provided a more friendly program and should have done a better job on the manual.

You could also try repeating exactly what you have been doing, but on a different C-128 system. The chances of this being a hardware problem are slim, but it's best to explore every avenue.

Another thing you didn't mention was the sort of file you were trying to send and whether it's always the same file that stops in the middle of the transfer. If it is, try another file on a different disk.

*Q I have a C-64, a 1541, an Epson FX-80 printer, a Magnavox 80 monochrome monitor, a Cardco G-Wiz interface and the PaperClip word processor. I've seen 80-column boards advertised and am wondering if they work well. Also, could you recommend an 80-column adapter, and is there an 80-column word processor that would work with the adapter? I use my computer primarily for word processing and telecomputing.*

—JERRY SMITH
WAGONER, OK

A Batteries Included, the developer of PaperClip, at one time made an 80-column adapter for the C-64 called the BI-80. It came with Basic 4.0 and looked fantastic in monochrome. I have one of these interfaces and use it all the time.

Check your original PaperClip disk to see if there's a file called PCLIP64-E-SC-80, or something similar, on it. This is an 80-column version of PaperClip, and it and the BI-80 were made for each other.

Batteries Included has been bought out by Electronic Arts (1820 Gateway Drive, San Mateo, CA 94404; 415-571-7171). Contact EA for more information or for the 80-column version of PaperClip, if it isn't on your disk.

I doubt they'll have a BI-80, though. To find one, you'll probably have to check the used market or poke around on the dusty shelves of your local Commodore dealer (if you have one).

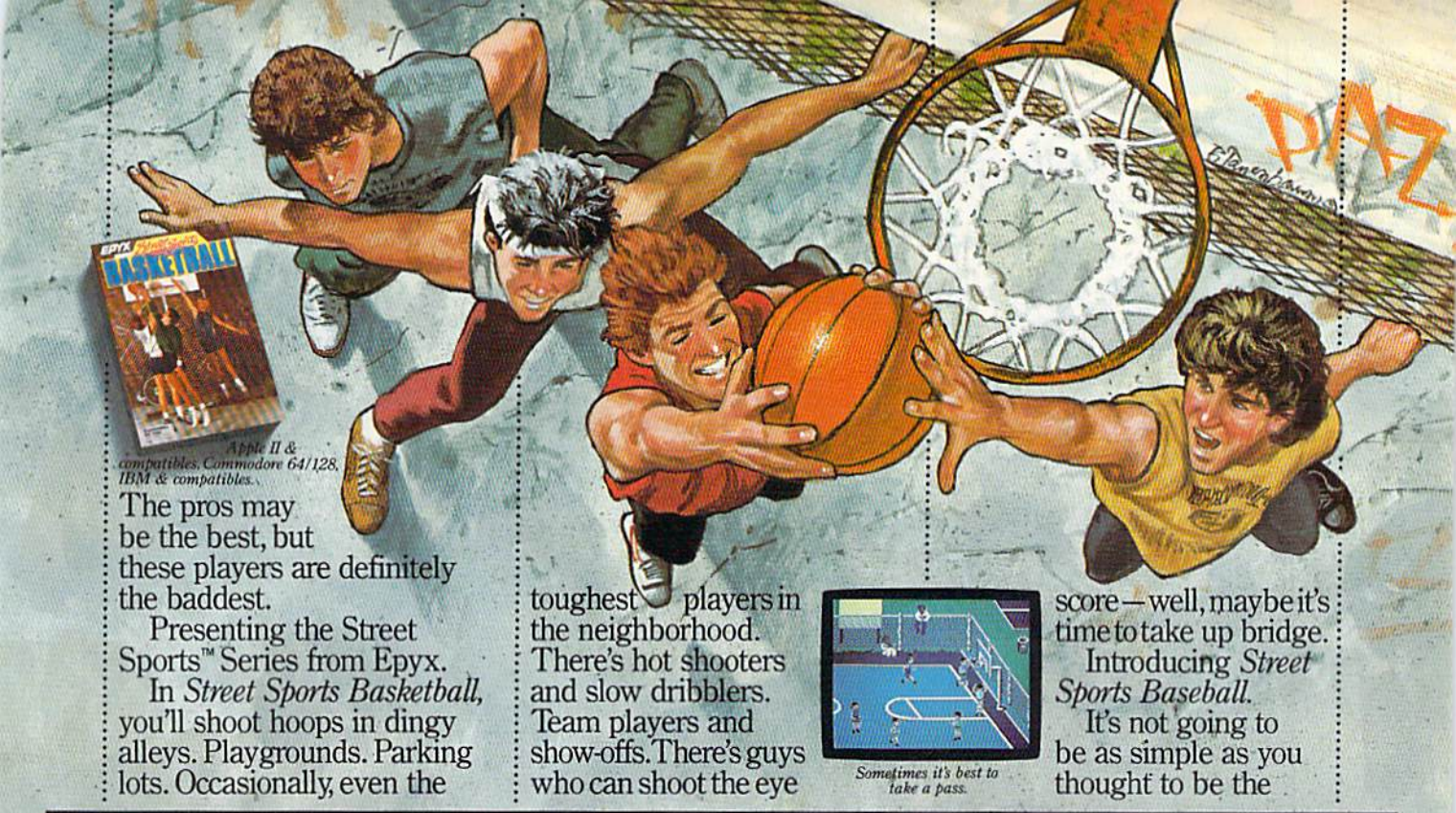
If you can't find the adapter, you can also achieve 80 columns with a C-128 and PaperClip II (the special PaperClip for 128 mode). In fact, depending on how much you have to pay for a BI-80, you might be better off with the C-128. The BI-80 used to cost $200, and if you still have to pay anything like that, you can have a C-128 with all its capabilities for just a bit more.

Also, the BI-80 draws quite a bit of electricity, and if you have a lot of other devices connected to your C-64, it might zap the computer's power supply. If you do get the adapter, you may be able to plug an external power supply into it directly. Later BI-80s included this feature. ■

*We invite you to submit your telecommunications tragedies, triumphs and thoughts to:*

David Bradley
Telecomputing Workshop
RUN Magazine
80 Elm St.
Peterborough, NH 03458

*David Bradley can be contacted on Quantum Link and PeopleLink as DavBradley, on Delphi as DavidBradley and on his own BBS as SYSOP. His BBS number is 813-377-5941, and it operates at 300 and 1200 baud.*

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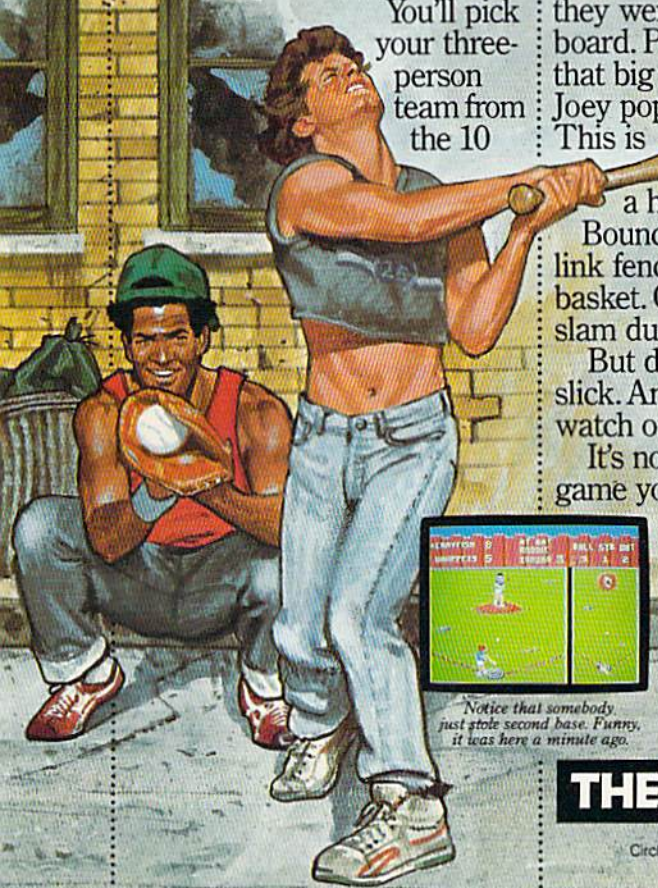



*Notice that somebody just stole second base. Funny, it was here a minute ago.*

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## THE STREET SPORTS SERIES

Circle 153 on Reader Service card.

# *RUN*'s Checksum Program

By BOB KODADEK

*RUN*'S ORIGINAL PERFECT TYPIST programs have been valuable aids, but they're not as perfect as one would like. To improve the situation, we're introducing a new entry program, *RUN*'s Checksum which all programs listed in *RUN* will use beginning with this issue. The most noticeable difference between our new program and the Perfect Typist is that *RUN*'s Checksum serves for both the C-64 and the C-128.

A less obvious difference is that *RUN*'s Checksum uses an algorithm that ensures that every byte of data entered has a unique value, depending on its position in the line. As with Perfect Typist, all you need to do is compare the checksum that appears with the value presented as REM*### at the end of each line in the program listing.

## How To Use *RUN*'s Checksum

Type in *RUN*'s Checksum in either 64 or 128 mode and save it to disk before running. When you're ready to type in a program from *RUN*, first load and run *RUN*'s Checksum. It will automatically detect which computer it's running on, make the necessary adjustments and display either the 64 or 128 version on the screen. At this point, you'll also see a SYS number that displays the starting address for activating the checksum. Always use this SYS number to toggle the Checksum on and off.

Pressing the run-stop and restore keys will not disable this utility. In order to turn off *RUN*'s Checksum, enter the SYS command and press the return key. Entering this SYS command again will re-activate the checksum. Be certain to disable *RUN*'s Checksum before attempting to run another program from Basic.

## Similarities and Differences

*RUN*'s Checksum retains the features of Perfect Typist and functions in exactly the same way, except that it produces different checksum numbers. Therefore, you cannot use *RUN*'s Checksum to type in listings from any *RUN* issues prior to this one. On the other hand, all listings starting with the January 1988 issue cannot be entered with either the 64 or the 128 Perfect Typist.

Keep the following in mind when you're entering listings: Basic keywords can be abbreviated; spaces affect the checksum only if they appear within quotes; and the order of characters will affect the checksum value. After entering a Basic line and pressing the return key, a one-, two- or three-digit number from 0 to 255 appears in the left-hand margin directly below the line you entered.

If the number matches the checksum value in the program listing, the line is correct, and you may continue. You enter the next line by typing it in directly over the previous line's checksum value. If the number that appears *doesn't* match the listing's checksum value, then proofread the line, comparing it with the magazine listing. Then move the cursor back up to the line and make your corrections. After you press return, the correct checksum value should appear. Continue entering the listing in this manner until all the program lines have been entered, and then deactivate *RUN*'s Checksum, using the SYS number. Save the finished program.

## Limitations

While our new checksum utility can find any entry errors, it won't detect an omitted line. If all the checksums match and the program still won't run, look carefully to see that you've entered every line from the listing. Another problem that may occur is a conflict with another resident program, such as the DOS Wedge.

Also, before you attempt to run a new program for the first time, it's good practice to remove any resident programs and cartridges. This can be done by turning the computer off and then on again or by performing a system reset. On the 128, press the reset button on the right-hand side of the computer. 64 users can enter SYS 64738 and press the return key. But, before doing this, make sure you've saved a copy of the new program. Ⓡ

*Bob Kodadek has authored many* RUN *programs, including the highly popular 64 Notepad.*

**Listing 1. *RUN*'s Checksum program.**

```
10 REM RUN'S CHECKSUM 64/128 - WRITTEN BY
   BOB KODADEK
20 MO=128:SA=3328:IF PEEK(4096)THEN MO=64
   :SA=49152
30 FOR I=0TO140:READ B:CK=CK+B:POKE SA+I,B
   :NEXT
40 IF CK<>16951 THENPRINT"DATA ERROR!":END

50 PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":
   PRINT
60 PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO
   =128 THEN 90
70 POKESA+13,124:POKESA+15,165:POKESA+25,1
   24:POKESA+26,165
80 POKESA+39,20:POKESA+41,21:POKESA+123,20
   5:POKESA+124,189
90 POKESA+4,INT(SA/256):SYS SA:NEW
100 DATA 120,162,24,160,13,173,4,3,201,24,
    208,4,162,13,160,67,142,4,3,140
110 DATA 5,3,88,96,32,13,67,152,72,169,0,1
    41,0,255,133,176,133,180,166,22
120 DATA 164,23,134,167,132,168,170,189,0,
    2,240,58,201,48,144,7,201,58,176
130 DATA 3,232,208,240,189,0,2,240,42,201,
    32,208,4,164,180,240,31,201,34
140 DATA 208,6,165,180,73,1,133,180,230,17
    6,164,176,165,167,24,125,0,2,133
150 DATA 167,165,168,105,0,133,168,136,208
    ,239,232,208,209,169,42,32,210
160 DATA 255,165,167,69,168,170,169,0,32,5
    0,142,169,32,32,210,255,32,210
170 DATA 255,169,13,32,210,255,104,168,96■
```

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The next question is: "Which modem is best for me?" Let us first say that almost all modems (and services) are set up to communicate in one of three speeds; 300, 1200 and 2400 Baud. If you look around you will find that there is a flood of 300 baud modems on the market and sometimes at very low prices. The reason is simple, they are being dumped because most computer users prefer 1200 Baud. (1200 Baud is about 4 times as fast which means you spend about ¼ the time and money getting the data you want and more time enjoying it.)

You may also be wondering about getting a 2400 Baud modem. 2400's are great (and quite expensive), only if you have a dedicated, data-grade phone line. Here's why. The regular phone system doesn't have the signal clarity and bandwidth to support more than about 1200 baud and as a result, 2400 Baud modems will usually run at either 1200 or, on a real bad line, 300 Baud. They adapt to the worst-case line conditions and will slow transmission accordingly. Why buy a 2400 Baud modem for a lot more money when it's going to transmit at 1200 Baud most of the time anyway? (Kind of like buying a sports car then always running at lower speed).

You will also notice a few very cheap 1200s on the market at "too good to be true prices". They are. The reason is that they are either not truly Hayes and/or Commodore 1670 compatible therefore not usable in all situations and with all services. The Aprotek Minimodem-C™ is both Hayes and Commodore 1670 compatible and 1200 baud. Why not get a modem that will satisfy your present AND future needs by going directly to an inexpensive Aprotek Minimodem-C™ especially when we have it on sale?

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# COMMODORE CLINIC

*Is there an expansion cartridge for GEOS 128? Where can you get the discontinued Super Expander graphics cartridge for your C-64?* RUN*'s new Clinic columnist has the answers.*

By LOU WALLACE

## SOFTWARE

**Q** *Will the new 1581 drive work with a fast-load cartridge on my C-64?*

—MICHAEL DIPAOLA
WESTWOOD, NJ

**A** Not at this time. Fast-loaders (software or hardware) make extensive use of the ROM routines built into the 1541 and 1571 drives. That's why some of the so-called "compatible" disk drives don't work properly with all software. The 1581 has a new ROM, very different from the 1541 and 1571, and uses a different disk format, so it's incompatible with the current fast-load packages. However, if enough 1581s are sold, companies like Epyx or Access Software (who produce fast-load cartridges for the 1541) will very likely make one for the 1581.

**Q** *I've looked far and wide for a copy of the Super Expander graphics cartridge for my C-64, without any luck. Do you know where I can get one?*

—KEN GREEN
GAINESVILLE, FL

**A** The Super Expander cartridge, which gave the C-64 a set of excellent bit-map and sprite graphics commands, is no longer produced by Commodore. However, on the day your letter arrived, another letter came from Malcolm Kroeber, a Super Expander enthusiast, who reports that the Super Expander is available from Tenex Computer Express (PO Box 6578, South Bend, IN 46660; 800-348-2778) for only $7.95! I called the mail order firm and was told they do indeed have the Super Expander for $7.95 and have plenty in stock.

**Q** *I just began using RUN Script 128, version 2.56, from your Productivity Pak III. I followed the sequence for saving a file to disk (i.e., I pressed F1, followed by s for save). When the Filename prompt appeared, I entered "LETTER" with the double-quotation marks. Now the filename appears on my disk directory as ""LETTER. Note the twin set of quotes in front of the filename. Needless to say, I can't load the file. Help!*

—BOB CARROLL
THEODORE, AL

**A** Having made the same mistake myself, I know it's very easy to fix, regardless of the version of RUN Script you use. Boot RUN Script, press F1, followed by an l to load the file. When prompted for the filename, enter ?LETTER, and the file will load perfectly. Scratch the old file with ?LETTER for the filename, and resave the new one.

## HARDWARE

**Q** *My disk drive is failing the 1541 Demo Disk performance test. I can load from the drive, but I can't save anything. The drive passes the Demo Disk's mechanical test, but when I load a program, the computer sometimes locks up, and, worst of all, it keeps corrupting my disks. What's happening?*

—RONALD FORTUNE
SAN LEANDRO, CA

**A** Stop using your disk drive! You'll just corrupt more of your disks. It sounds like your drive's out of alignment and may even be suffering from chip failure. Take it to your local Commodore service center immediately. There's one called PET VET that's about five miles from you, at 4043 Rhoda Ave., in Oakland; their phone number is 415-530-8119.

**Q** *Does it matter which serial port of my 1541 I connect my 64 to?*

—JASON OEHRLI
HIGHLAND, CA

**A** You can use either port. The reason there are two serial ports is to "daisy chain" a printer or multiple disk drives.

**Q** *When the C-128 came out over a year ago, I thought that besides being able to use my C-64 games and programs on it, I could also take advantage of its 80 columns for word processing and its superior graphics to play better games. I'm having no problems using my 128 word processor, but I am having trouble with games.*

*For example, while the 64 mode may be compatible with C-64 programs, the 1571 disk drive, apparently, is not. Many of my games do not work on the 128 in 64 mode when I use them with the 1571.*

*Since almost all computer outlet stores won't take back a program package that's been opened, it seems to me that it is up to the software manufacturers to alert the consumer to any quirks.*

—SCOTT ANGSTREICH
CHERRY HILL, NJ

**A** The problem you're having with software loading is related to the problem with returning it to a store once it's been opened—software piracy. In an effort to stop the wanton copying of software (particularly games), manufacturers resort to various copy-protection schemes. Many of these techniques utilize specific areas of memory or specific routines within the 1541. If everything isn't just perfect (such as a printer not connected or a cartridge not plugged in or there's a full moon), the program won't load. Even if the drive is slightly out of alignment, it might not load. So you shouldn't be surprised that some software won't work on the 128 in 64 mode when you use a 1571.

However, there are a couple of tricks you can try to get your 1571 to load 1541-formatted programs. Sometimes the 1571 is still in 1571 mode, which might be the case, for example, if you started out in 128 mode and typed in GO 64. The drive may not have been set to 1541 mode when you entered GO 64. If that's the case, type in

```
OPEN 15,8,15,"U0>M0":CLOSE15
```

to reset the disk drive to single-sided, 1541 mode.

Another trick is to hold down the Commodore key when you power up ►

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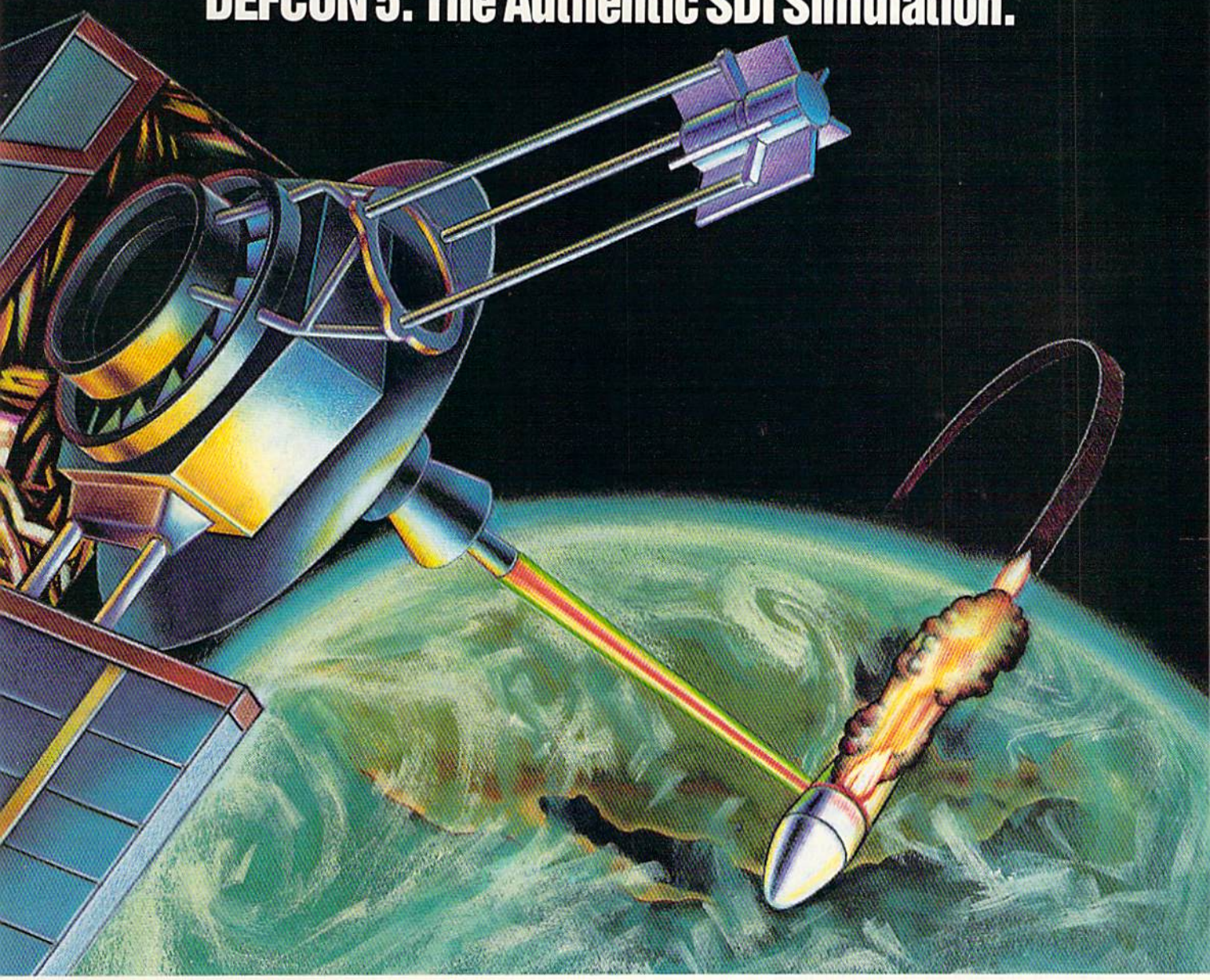

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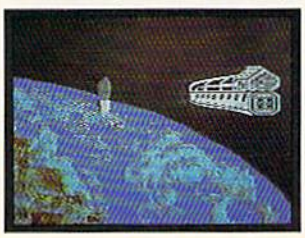

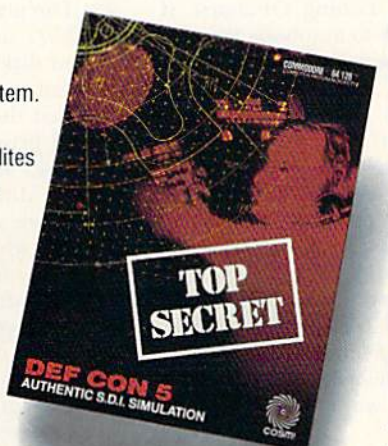


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or reset the computer. That will take you directly to C-64 and 1541 modes.

If you're still experiencing problems, there may be subtle differences between the 1541 and 1571 ROMs. Take the 1571 ROM to a Commodore service center for upgrading. There will be a charge, however, since it is not a free upgrade.

**Q** *I just bought the new GEOS 128, and already I'm tired of loading and reloading it. I've looked in vain for an expansion cartridge to hold GEOS in both 64 and 128 modes. Is there such a cartridge?*

—BILL SLAUGHTER
ARLINGTON, TX

**A** Yes. It's Commodore's 1750 512K RAM expansion cartridge. The 1750 works with GEOS 64 (on a 128 in 64 mode) and with GEOS 128 in 128 mode. You can use the cartridge as a 350K RAM disk with GEOS 128 or as a 174K RAM disk with GEOS 64. They make using GEOS much faster and much more productive. Just be sure you save the contents of the RAM disk files to a real disk drive before you turn off the computer, otherwise they'll be lost.

**Q** *When I insert a program disk into my 1541 disk drive and turn the computer on in 128 mode, the drive light blinks a couple of times and the drive head bangs. What causes this and how can I cure it?*

—GENE ULAT
CORPUS CHRISTI, TX

**A** What you are observing is the 1541 trying to autoboot a program. I spoke with the experts at Commodore about your problem, and they suggest you turn on your 128 *before* turning on the 1541. Then the computer, realizing that no disk drive is available, will stop trying to autoboot and instead will give you the Ready prompt. You can then turn on the disk drive without head banging or light flashing. Of course, if you do want a disk to autoboot, turn on the drive first, insert the disk and then turn on the C-128.

**Q** *I have two questions. First, I've seen C-64 software available for SAT preparation. Is there any company that offers C-64-compatible software for preparing for the GRE (Graduate Record Examination)? Second, I'm thinking about getting the Educator 64 for classroom use. However, the ads don't specify what, if any, form of storage device it comes with or uses. Since it appears to be a C-64 in a CBM PET case, I was wondering if it uses a 1541 serial drive, as the C-64 does, or a 2031-style IEEE drive, like the PET?*

—JACK DAVIDSON
WABASH, IN

**A** I checked with Beth Jala, *RUN*'s Review Editor about GRE preparation software, but she wasn't aware of any for the C-64 or C-128. As for the Educator 64, it's a C-64 in an old style PET case, but it still uses standard 1541 disk drives. Unless the ad explicitly states it includes a drive, you should assume you must buy it separately.

**Q** *When I turn on my C-64, all I see are strange characters on the screen! I've sought every possible method to solve this problem, but I couldn't. Is my power supply damaged, or what?*

—PATRICK LEUNG
NEW YORK, NY

**A** There are a number of possibilities, of which the power supply is one. You could try a friend's power supply on your computer, and if it works, you could conclude that, yes, you need a new power supply. But there are other possible problems. You could be experiencing a CPU failure. If that's the case, you'll need a new 6510 microprocessor. Whatever the problem, I strongly suggest you take it to your local CBM service center and let them take a look at it.

**Q** *I own a C-128 and a 1541. I want to upgrade my drive, as well as buy a new monitor. What are the differences between the 1571 and 1581 drives, and the 1902 and 2002 monitors? I've noticed that the 1581 is less expensive than the 1571, but I'm told it has more storage! Is it completely compatible with 64 and 128 software?*

—MICHAEL GREENSTEIN
ORANGE PARK, FL

**A** The major difference between the 1571 and 1581 is the greatly increased disk storage capacity (350K vs. 800K) of the 1581. But you should realize that there are not yet many commercial programs available on the 3½-inch disks accommodated by the 1581. Another difference is the 1581's faster load times. Also, the 1581 can be partitioned, which lets you use subdirectories on your disks.

As for software compatibility, no, the 1581 is not completely compatible. Software with disk-based copy-protection schemes probably won't work. However, unprotected software or software that can use the 1581 as a secondary data drive should work well.

As for the 2002, it is Commodore's "universal" monitor. It has composite, RGBI and RGBA connections, allowing it to work with both the C-64 and the C-128. Commodore is no longer manufacturing the 1902, which is becoming very difficult to get.

The October 1987 issue of *RUN* reviews the C-128D, 1581 drive and the 2002 monitor. Refer to it for additional information.

## PROGRAMMING

**Q** *I'm a 13-year-old programmer and I think your magazine is great! I'm writing a program and I want to know how to keep the listing from prying eyes.*

—BRIAN LEABY
N. BABYLON, NY

**A** On the C-64, use POKE 775,1 to disable program listing capability. To restore it, use POKE 775,167. On the C-128, use POKE 775,139 to disable and POKE 775,81 to restore.

**Q** *I accidentally used Save with Replace (SAVE "@0:FILENAME",8) on a C-64 program when I typed it in for the first time, not knowing I shouldn't have. Now I can't get the filename off the disk! Can you tell me how? Also, should I make a backup before scratching the program?*

—NANCYE A. KUSCHE
GLENDALE, AZ

**A** The easiest way is to simply rename the file. Use this command line in Direct mode:

```
OPEN 15,8,15, "R0:NEWFILENAME=
0:@0:FILENAME":CLOSE 15
```

Now you can scratch the old file without worrying about erasing the program with the filename "Filename". ■

*Do you have a problem or question about your Commodore computer system, software or programming? Just send your questions on a postcard to:*

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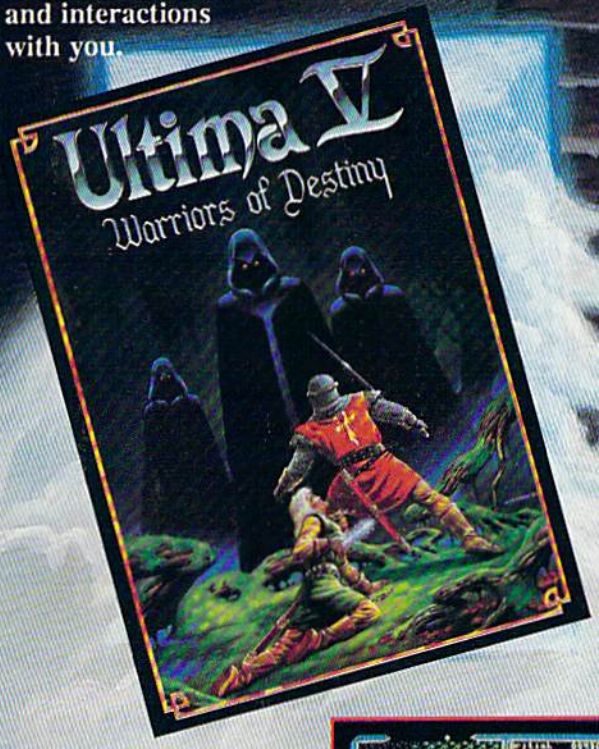

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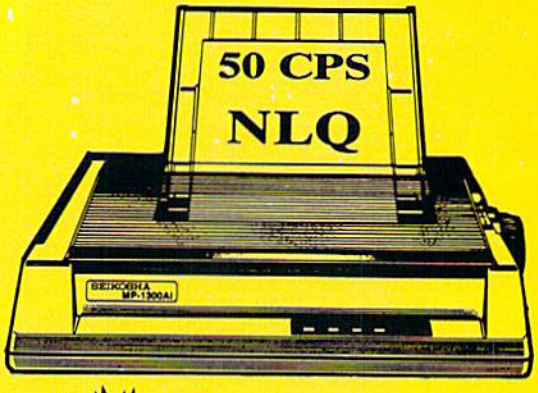


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# RUN TERM 128

*From p. 54.*

**Listing 1. RUN Term 128 Boot program.**
**[Note: Checksums are for *RUN*'s new checksum program.]**

```
Ø REM RUNTERM BOOT PROGRAM        :REM*94
1Ø BLOAD"TABLES",BØ,P(DEC("ØEØØ
   "))                            :REM*212
2Ø BLOAD"PUNTER128"                :REM*1
3Ø BLOAD"WXMODEM128"               :REM*124
4Ø BLOAD"RUNTERM128"               :REM*235
45 POKE22ØØ3,7:REM PRINTER SECO
   NDARY ADDRESS                   :REM*96
46 POKE22ØØ4,4:REM PRINTER DEVI
   CE NUMBER                       :REM*168
5Ø BANKØ:SYS22ØØØ                  :REM*81
```

**Listing 2. RUN Term 128 main program.**

```
1Ø OPEN 8,8,8,"RUNTERM128,P,W"
                                   :REM*167
15 FAST                            :REM*86
2Ø READ A$:IF A$="-1" THEN CLOS
   E8:END                          :REM*176
25 IF LEN(A$)<62 THEN 55
                                   :REM*232
3Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
   2Ø)+MID$(A$,43,29)              :REM*35
35 N=LEN(B$)/2                     :REM*38
4Ø FOR I=1 TO N                    :REM*2Ø
45 H$=MID$(B$,I*2-1,2):H=DEC(H$
   )                               :REM*222
5Ø PRINT#8,CHR$(H);:NEXT:GOTO 2
   Ø                               :REM*1ØØ
55 IF LEN(A$)<2Ø THEN B$=A$:GOT
   O 7Ø                            :REM*65
6Ø IF LEN(A$)<42 THEN B$=MID$(A
   $,1,2Ø)+MID$(A$,22,(LEN(A$)-
   21)):GOTO 7Ø                    :REM*148
65 B$=MID$(A$,1,2Ø)+MID$(A$,22,
   2Ø)+MID$(A$,43,LEN(A$)-42)
                                   :REM*8Ø
7Ø N=LEN(B$)/2                     :REM*67
75 FOR I=1 TO N                    :REM*73
8Ø H$=MID$(B$,I*2-1,2):H=DEC(H$
   )                               :REM*251
85 PRINT#8,CHR$(H);:NEXT:GOTO 2
   Ø                               :REM*129
1ØØ REM RUNTERM 128 DATA
                                   :REM*143
1Ø1 DATA E2554CØØ26ØØØØØØØØØØ Ø
    ØØØØØØØØØØ4C6456Ø7 Ø423564
    5594559415444                  :REM*175
1Ø2 DATA ØØØØØØØØØØØØ8FØØØØØØ Ø
    ØØØØØFFFFØØØØØØ13ØØ ØØØØØØØ
    ØØØØØØØØØ8541                 :REM*149
1Ø3 DATA 54445ØØØØØØØØØ4CB15C 4
    8A212ADØ3562ØCCCDE8 ADØ2562
    ØCCCD682ØCACD                  :REM*123
1Ø4 DATA A212A9ØØ4CCCCDA9Ø28D Ø
    ØFF2ØE559A9ØØ8DØØFF 4C65FAØ
    ØØØØØ48A9ØØ8D                 :REM*156
1Ø5 DATA ØØFF682ØE255A9Ø28DØØ F
    F6ØAØØFB94156996EØA 881ØF7A
    ØØFB9545699ØØ                 :REM*228
1Ø6 DATA 26881ØF72Ø1E68A9FF8D F
    D12A9ØØ8DØØ56A9288D ØF56A93
    C8D1Ø56AØ5ØA9                  :REM*211
1Ø7 DATA 2Ø99ØØ1B881ØFAA5D71Ø Ø
    DA95Ø8DØF568DØØ56A9 138D1Ø5
    6A9ØE2ØD2FFA5                  :REM*65
1Ø8 DATA F18DØ456ADØ5568D21DØ A
    9FF8D2Ø56A9ØØ8DØ8DC 8DØ8DD8
    D2F2826Ø65B2Ø                  :REM*19Ø
1Ø9 DATA 7DFF131393ØØA9Ø185E5 8
    D2156A9ØØ85BØA9Ø485 B12ØØ35
    D2Ø183Ø2Ø945D                  :REM*71
11Ø DATA 2Ø8C5AA91A85FAA95685 F
    BA9ØØ85FCA9FAA2ØAAØ Ø12Ø65F
    FA91B85FAA956                  :REM*81
111 DATA 85FBA9ØØ85FCA9FAA2Ø9 A
    ØØ42Ø65FF2Ø7DFF93ØD ØD72756
    E5445524D2Ø31                  :REM*128
112 DATA 3238ØD6259ØD744F4D2Ø 6
    2524F574EØDØØ2Ø7F62 2Ø6Ø5B2
    Ø56574C4559AØ                  :REM*73
113 DATA 27A9CØ2ØD2FF88DØF8A9 Ø
    D4CD2FF2Ø7DFFØDØD12 2Ø2Ø2Ø2
    Ø2Ø2Ø2Ø72756E                  :REM*34
114 DATA 7465726D2Ø313238 2ØD2D 2
    D2Ø636F6D6D616E6473 2Ø2Ø2Ø2
    Ø2Ø2Ø2ØØD1268                  :REM*16
115 DATA 4F4C442Ø444F574E2Ø61 6
    C742Ø4B4559 2Ø574954 482Ø544
    8452Ø464F4C4C                  :REM*21Ø
116 DATA 4F57494E473AØDØØ2Ø47 5
    72Ø7DFF612Ø3D2Ø6155 544F444
    9414C2Ø2Ø2Ø2Ø                 :REM*2Ø6
117 DATA 2Ø2Ø2Ø2ØDD2Ø732Ø3D2Ø 7
    3454E442Ø6255464645 52ØD622
    Ø3D2Ø62554646                  :REM*12Ø
118 DATA 45522Ø744F47474C452Ø 2
    Ø2ØDD2Ø742Ø3D2Ø7449 4D452Ø7
    34554ØD632Ø3D                  :REM*22
119 DATA 2Ø634F4E464552454E43 4
    52Ø7445524D2ØDD2Ø75 2Ø3D2Ø7
    55Ø4C4F4144ØD                  :REM*228
12Ø DATA 642Ø3D2Ø644F574E4C4F 4
    1442Ø2Ø2Ø2Ø2Ø2Ø2Ø2Ø DD2Ø762
    Ø3D2Ø76494557                  :REM*1Ø
121 DATA 2Ø625546464552ØDØØ2Ø 7
    DFF652Ø3D2Ø6543484F 2Ø28645
    55Ø4C4558292Ø                  :REM*Ø
122 DATA 2Ø2ØDD2Ø772Ø3D2Ø6255 4
    6464552Ø7752415ØØD 662Ø3D2
    Ø66494C452Ø72                  :REM*31
123 DATA 4541444552Ø2Ø2Ø2Ø2Ø D
    D2Ø7A2Ø3D2Ø7A45524F 2Ø62554
    6464552ØD682Ø                  :REM*116
124 DATA 3D2Ø6F4E2F6F46462Ø68 4
    F4F4B2Ø2Ø2Ø2Ø2ØDD2Ø 4Ø2Ø3D2
    Ø6449534B2Ø63                  :REM*197
125 DATA 4F4D4D414E44ØD6B2Ø3D 2
    Ø66554E4354494F4E2Ø 6B45595
    32Ø2Ø2ØDD2Ø2A                  :REM*29
126 DATA 2Ø3D2Ø644546415 54C54 5
    3ØD6C2Ø3D2Ø6C4F4144 2Ø62554
    6464552Ø2Ø2Ø                  :REM*161
127 DATA 2Ø2ØDD2Ø5E2Ø3D2Ø6241 5
    5442Ø72415445ØDØØ2Ø 4757Ø7
    DFF6275666665                  :REM*236 ►
```

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```
128 DATA 722Ø7Ø6F696E7465723A 2
    ØØØA5B138E9Ø4A6BØ2Ø 328E2Ø7
    DFF2Ø28656E64       :REM*173
129 DATA 3D363Ø31363Ø29ØDØØ2Ø 4
    757A5EB8DØ756A5EC8D Ø856A9Ø
    Ø8D1F566ØEAAD       :REM*16Ø
13Ø DATA ØØ56FØØ32Ø4592Ø6Ø5B 2
    Ø5E5C2ØD459C91BDØØ1 6ØC985D
    ØØ36CF755A215       :REM*149
131 DATA DD8159FØØ9CA1ØF86CF9 5
    54C4559A95948A94448 BD97594
    8BDAD59486Ø41       :REM*22Ø
132 DATA 4243444546484B4C5354 5
    5575A4Ø2A5E56313233 4A656F7
    86E6F616F5D5F       :REM*15
133 DATA 5F626D6F5D776F6F5B6A 6
    A6A75Ø3Ø6294C1E4585 B5ØAC27
    EA612489DAA2A       :REM*146
134 DATA CF7FA8AEF56Ø48AE11DØ 2
    96F8D11DØA9Ø18D3ØDØ 686Ø48A
    9ØØ8D3ØDØAD11       :REM*83
135 DATA DØØ91Ø8D11DØ686ØØØA2 2
    ØADØ1DD291ØDØØ2A2Ø3 8E4Ø1BA
    DE459FØ25A9ØØ       :REM*211
136 DATA 8DE459ADØØ56DØ1AAØØF B
    94Ø1BØ98Ø9918Ø4881Ø F5AØ17B
    9ØØ1BØ98Ø99ØØ       :REM*25
137 DATA Ø4881ØF56ØA9Ø18DE459 A
    DØBDCAA29ØF18693Ø8D 441B8A1
    ØØ4A21Ø1ØØ2A2       :REM*12
138 DATA Ø18E4E1BA22Ø291ØFØØ2 A
    2318E431BADØADCAA29 ØF693Ø8
    D471B8A4A4A4A       :REM*144
139 DATA 4A18693Ø8D461BADØ9DC A
    A29ØF693Ø8D4A1B8A4A 4A4A4A1
    8693Ø8D491BAD       :REM*235
14Ø DATA Ø8DC693Ø8D4C1BA93A8D 4
    51B8D481BA92E8D4B1B A9ØD8D4
    F1B6Ø78A96E8D       :REM*132
141 DATA 14Ø3A9ØA8D15Ø3586Ø78 A
    9658D14Ø3A9FA8D15Ø3 586ØADØ
    Ø56DØØ16ØAØ4F       :REM*34
142 DATA A9ØØ8DØ356B9ØØ1BØ98Ø 8
    CØ2562Ø2656A9Ø88DØ3 56ADØ45
    62Ø26568810E2       :REM*143
143 DATA 6Ø3Ø333Ø3ØØØ3132Ø3Ø Ø
    ØAØ28A92ØØ98Ø99ØØ1B 881ØFAA
    ØØ3AD1456DØØB       :REM*135
144 DATA B9CD5A99ØØ1B881ØF73Ø Ø
    9B9D25A99ØØ1B881ØF7 A22ØAD1
    356FØØ2A2Ø28E       :REM*191
145 DATA Ø61BA22ØAD1656FØØ2A2 Ø
    58EØ81BA22ØAD1556FØ Ø2A2178
    EØA1BA22ØADØA       :REM*217
146 DATA ØFFØØ2A2ØA8EØC1BA22Ø A
    DØ7281ØØ2A2148EØE1B A22ØADØ
    9281ØØ2A2Ø48E       :REM*151
147 DATA ØF1BA22ØAD2F283ØØ2A2 1
    38E1Ø1BA22ØAD2256FØ Ø2A2128
    E121B6ØØØA9ØØ       :REM*63
148 DATA 8D5F5BA9Ø185E5A9168D 1
    8DØ8D2CØAA9Ø48D3BØA A214A9Ø
    82ØCCCDA2ØCA9       :REM*213
149 DATA ØØ2ØCCCDA2ØEA9ØØ2ØCC C
    DA9Ø88D2FØAA9ØØ8D2E ØA6ØA9Ø
    18D5F5BA9ØØ85       :REM*157
15Ø DATA E5A93C8D3BØAA9188D2F Ø
    AA91Ø8D2EØAA9932ØD2 FFA9F68
    D2CØA8D18DØA2       :REM*2Ø6
151 DATA 14A9182ØCCCDA2ØCA91Ø 2
    ØCCCDA2ØEA91Ø4CCCCD 2Ø965BA
    DØØ56FØØ32ØC4      :REM*14
152 DATA 592Ø5Ø792Ø895DC911DØ Ø
    62Ø597A4CDE5BC991DØ Ø62Ø797
    A4CDE5BC913DØ       :REM*159
153 DATA Ø62ØØ35D4CDE5BC92BDØ Ø
    CEE4F79AD4F79C9EF9Ø CEFØEAC
    92DDØØDCE4F79       :REM*85
154 DATA AD4F79C9Ø4BØBE4CF95B 2
    ØD4596ØCE5D5CAD5D5C DØØ8A9Ø
    48D5D5C4CD75A       :REM*16
155 DATA C9Ø1DØØ34CA65AC9Ø2DØ Ø
    6AD215685E56ØADØ456 85F16Ø4
    8A9A22ØD2FFA9       :REM*78
156 DATA 9D2ØD2FF686Ø48A92ØDØ F
    1Ø4A9Ø48D5D5CAE1F56 FØØDA2Ø
    Ø8E1F56A9932Ø       :REM*172
157 DATA D2FF4C895CAEØ75686EB 8
    6E8AEØ85686EC86E92Ø 5CC12Ø5
    7CD2Ø245C2ØB7       :REM*95
158 DATA FF29Ø8DØ29A2Ø52ØC6FF 2
    ØE4FF297FAABDØØØFFØ E9AE135
    6FØØA482Ø1Ø5D       :REM*221
159 DATA 68486CF555682ØD2FFA9 Ø
    Ø85F44C895C2ØCCFF2Ø 4B5C2ØE
    4FF2Ø585CFØBF       :REM*78
16Ø DATA A6D3EØØ8DØØBA6EB8EØ7 5
    6A6EC8EØ8566ØC985DØ Ø62Ø565
    74C895CAE1656       :REM*148
161 DATA FØØ5482ØD2FF68AABDØØ Ø
    E48A2Ø52ØC9FF682ØD2 FF2ØCCF
    F4C895CA9Ø48D       :REM*247
162 DATA 4F79A9Ø8D4E794C5Ø79 A
    2BØ8EB9Ø2A2Ø1AØØØ2Ø 77FFE6B
    ØDØ1FE6B1A6B1       :REM*213
163 DATA EØEF9Ø17AE1556DØ13A2 E
    E86B1A2FF86BØA2Ø08E 13564CD
    75A86B16ØA2Ø4       :REM*73
164 DATA 86B1A2ØØ86BØ6ØEAA9ØØ 8
    D1556A9Ø18D1356A9Ø4 85B1A9Ø
    Ø85BØA9ØD2Ø1Ø       :REM*112
165 DATA 5DAD1356DØF6A9Ø485B1 A
    9ØØ85BØ6Ø2Ø7DFFØDØD 614E592
    Ø4B4559Ø2Ø544F      :REM*163
166 DATA 2Ø434F4E54494E5545ØD Ø
    Ø2ØCCFF2ØE4FFFØFB6Ø Ø8ØØA9Ø
    2A292AØ5D2ØBD       :REM*8Ø
167 DATA FFA2ØØ2Ø68FFA9Ø5A2Ø2 A
    ØØØ2ØBAFF2ØCØFFA9ØØ 8D14564
    C616F2Ø965B2Ø       :REM*54
168 DATA 7DFF93ØDØDØD66554E43 5
    4494F4E2Ø6B4559533A ØDØD3C2
    Ø732Ø3E415645       :REM*17Ø
169 DATA 2Ø2Ø3C2Ø6C2Ø3E4F4144 Ø
    DØØ2Ø895DC953DØØ34C 475EC94
    CFØØ16Ø2Ø7DFF       :REM*54
17Ø DATA ØDØD6C4F41442Ø662D6B 4
    55953ØDØØ2ØØ95E6Ø2Ø 9A5EFØE
    4A9ØØAA2Ø68FF       :REM*254
171 DATA AD6A76A2ØØAØ1D2ØBDFF A
    9ØØA2Ø8AØFF2ØBAFFA9 ØØ2ØD5F
    F9ØC42Ø7DFFØD       :REM*138
172 DATA ØD6C4F41442Ø6552524F 5
    221ØDØØ2ØCCFF2Ø6F5D 6Ø2Ø7DF
    FØDØD73415645       :REM*211
173 DATA 2Ø662D6B455953ØDØØA9 Ø
    Ø8D685EAØ118C695E88 2Ø6A5E6
    ØØØØØ858C848D       :REM*147
174 DATA 2Ø9A5EFØ26A9ØØAA2Ø68 F
    FAD6A76A2ØØAØ1D2ØBD FFA9ØØA
    2Ø8AØØØ2ØBAFF       :REM*124
175 DATA A98CAE685EAC695E2ØD8 F
    FBØ9562Ø7DFFØDØD65 4E54455
    22Ø66494C454E       :REM*72
176 DATA 414D453A2ØØØA91Ø8D69 7
    62Ø6B766Ø2C532C52ØØ 8DBA5E8
    CBC5EAØØØAE6A       :REM*18
177 DATA 76B9B95EFØØ79DØØ1DC8 E
    8DØF4A9ØØ9DØØ1D8E6A 766ØA9Ø
    Ø8D1556A9Ø18D       :REM*3
178 DATA 1356A2Ø82ØC6FF2ØE4FF 4
    8A59ØDØØF682Ø1Ø5DAD 1356DØE
    FA9ØØ8D13566Ø       :REM*24
179 DATA 68A9ØØ8D13566Ø2Ø965B 2
    Ø7DFFØDØD615Ø5Ø454E 442Ø736
    5712Ø46494C45       :REM*93
18Ø DATA 2Ø544F2Ø625546464552 Ø
    DØDØØ2Ø9A5EDØØ16ØA9 53AØ522
    ØBE5EA9ØØAA2Ø       :REM*48
181 DATA 68FFAD6A76A2ØØAØ1D2Ø B
    DFFA9Ø8AAA82ØBAFF2Ø CØFF9Ø1
    EA9Ø82ØC3FF2Ø       :REM*169
182 DATA 7DFFØDØD6C4F41442Ø65 5
    2524F5221ØDØØ2ØCCFF 2Ø6F5D6
    Ø2ØDE5EA9Ø82Ø       :REM*177
183 DATA C3FF6ØØØØØ2ØC459A9ØØ 8
    5FAA9Ø485FBAE12612Ø C9FFAØØ
    ØA5D3DØ272Ø52       :REM*158
184 DATA 7A2C13611ØØ4AABDØØØE 2
    ØD2FFA59ØDØ14E6FADØ Ø2E6FBA
    5FBCD8Ø5F9ØDA       :REM*88
185 DATA A5FACD7F5F9ØD32ØD459 6
    Ø2Ø965BA9Ø88D12618D 1361207
    DFFØDØD734156       :REM*199
186 DATA 452Ø625546464552ØDØD 7
    36176653A2Ø3C313E3D 744F2Ø6
    2554646455220       :REM*218
187 DATA 654E44ØD2Ø2Ø2Ø2Ø2Ø2Ø 3
    C323E3D744F2Ø775249 5445207
    Ø4F494E544552       :REM*112
188 DATA ØDØDØØ2Ø895DC931FØØ5 C
    932FØØE6ØA9EF8D8Ø5F A9ØØ8D7
    F5F4C386ØA5B1       :REM*173
189 DATA 8D8Ø5FA5BØ8D7F5F2Ø7D F
    FØDØD73454E442Ø744F 3AØD3C2
    Ø312Ø3E2Ø3D2Ø       :REM*5
19Ø DATA 7Ø52494E544552ØD3C2Ø 3
    22Ø3E2Ø3D2Ø6D4F4445 4DØD3C2
    Ø332Ø3E2Ø3D2Ø       :REM*228
191 DATA 6449534BØDØØ2Ø895DC9 3
    1DØØD2Ø6162BØØ32Ø81 5FA9Ø44
    CC3FFC932DØØD       :REM*1Ø3
192 DATA A9Ø58D1261A9FF8D1361 4
    C815F2Ø9A5EFØ84A953 AØ572ØB
    E5EA9ØØAA2Ø68       :REM*17Ø
193 DATA FFAD6A76A2ØØAØ1D2ØBD F
    FA9Ø8AAA82ØBAFF2ØCØ FF9Ø1EA
    9Ø82ØC3FF2Ø7D       :REM*2ØØ
194 DATA FFØDØD73415645 2Ø6552 5
    24F5221ØDØØ2ØCCFF2Ø 6F5D6Ø2
    Ø815FA9Ø84CC3       :REM*65
195 DATA FFA2Ø82ØC6FF2ØE4FF48 A
    59Ø8D13612ØCCFF682Ø 14612ØE
    1FFFØØ5AD1361       :REM*133
196 DATA FØE12ØCCFFA9Ø82ØC3FF A
    9Ø42ØC3FF6ØØØØ48AE 1261DØØ
    4684CD2FFEØØ4       :REM*9Ø ►
```

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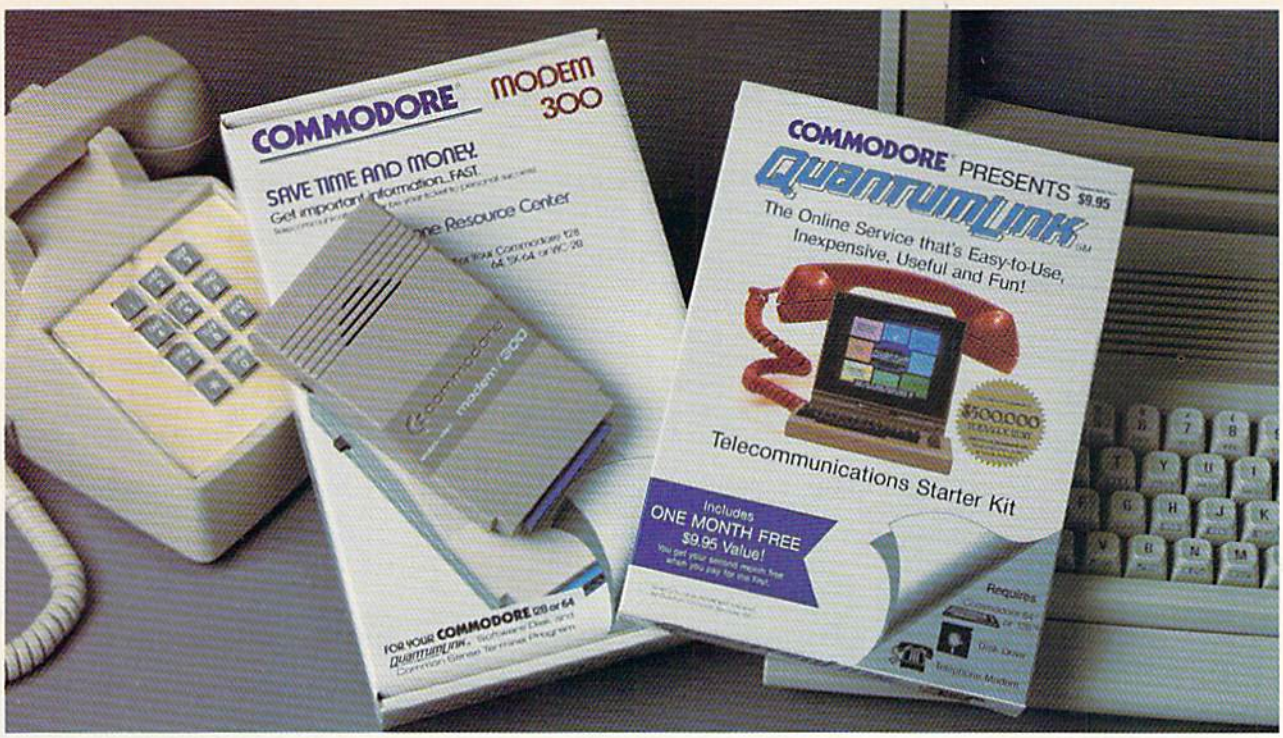
197 DATA DØØF2Ø C9FF68482ØD2FF 2
    ØCCFF684CD2FFA2Ø52Ø C9FF684
    8AABDØØØE2ØD2          :REM*47
198 DATA FF2ØCCFF684CD2FF2Ø96 5
    B2Ø7DFF93ØDØDØD7245 41442Ø7
    365712Ø66494C          :REM*8Ø
199 DATA 452Ø544F3AØDØD3C2Ø31 2
    Ø3E2Ø3D2Ø7343524545 4EØDØD3
    C2Ø322Ø3E2Ø3D          :REM*148
2ØØ DATA 2Ø7Ø52494E544552ØDØD 3
    C2Ø332Ø3E2Ø3D2Ø6D4F 44454DØ
    DØDØØ2Ø895DC9          :REM*167
2Ø1 DATA 31DØØ34CAA61C932DØØ3 4
    CB261C933FØ1160A9ØØ 8D12614
    CBF612Ø61629Ø          :REM*251
2Ø2 DATA Ø84C4662A9Ø58D12612Ø 7
    DFFØDØD7553452Ø3C6E 6F2Ø736
    3726F6C6C3E2Ø          :REM*98
2Ø3 DATA 544F2Ø5Ø41555345ØD41 4
    E442Ø3C73746F7Ø3E2Ø 544F2Ø4
    1424F52542Ø52          :REM*1Ø
2Ø4 DATA 454144ØDØØ2Ø9A5EDØØ1 6
    ØA953AØ522ØBE5EA9ØØ AA2Ø68F
    FAD6A76A2ØØAØ          :REM*166
2Ø5 DATA 1D2ØBDFFA9Ø8AAA82ØBA F
    F2ØCØFFBØØ34CE56ØA9 Ø82ØC3F
    FA9Ø42Ø3FF2Ø           :REM*133
2Ø6 DATA 7DFFØDØD6C4F41442Ø65 5
    2524F5221ØDØØ2ØCCFF 2Ø6F5D6
    Ø2ØCCFF2Ø7DFF          :REM*251
2Ø7 DATA ØDØD7Ø52494E5445522Ø 6
    552524F5221ØDØØ4C23 62A9Ø48
    D1261AEF455AC          :REM*222
2Ø8 DATA F3552ØBAFFA9ØØ2Ø68FF A
    9ØØ2ØBDFF4CCØFFØØØØ ØØ2Ø965
    B2Ø7DFF93ØDØD          :REM*219
2Ø9 DATA ØD3C2Ø612Ø3E4D2Ø4F52 2
    Ø3C2Ø7Ø2Ø3E4D3FØDØD ØØ2Ø895
    DA2ØØC941FØ11          :REM*147
21Ø DATA A28ØC95ØFØØBA2Ø3A9ØØ 9
    DØ8DCCA1ØFA6Ø8E7D62 2Ø7DFFØ
    DØD774841542Ø          :REM*194
211 DATA 49532Ø5448452Ø684F55 5
    23F2Ø28312D3132293A 2ØØØ2ØC
    CFF2Ø1D63AD7C          :REM*65
212 DATA 62ØD7D628DØBDC2Ø7DFF Ø
    DØD774841542Ø49532Ø 5448452
    Ø6D494E555445          :REM*179
213 DATA 3F2Ø283Ø2D3539293A2Ø Ø
    Ø2Ø1D63AD7C628DØADC A9ØØ8DØ
    9DC8DØ8DC6ØA9          :REM*137
214 DATA Ø28D69762Ø6B76FØ37EØ Ø
    2FØØBADØØ1D8DØ11DA9 3Ø8DØØ1
    DADØØ1D2Ø5Ø63          :REM*1Ø5
215 DATA ØAØAØAØA8D7C62ADØ11D 2
    Ø5Ø63ØD7C628D7C626Ø C93Ø9ØØ
    8C93ABØØ438E9          :REM*163
216 DATA 3Ø6Ø6868686860ØØØØØØ Ø
    ØØØØØØØADØ9DCCDØ9DC FØFBCAD
    ØF56ØA8AD6163          :REM*23
217 DATA 8DØ1DD2Ø9563AD62638D Ø
    1DD2ØAØ6388DØEBA9ØØ 85A2A5A
    2C9289ØFA6ØA9          :REM*253
218 DATA ØØ85A2A5A2C9Ø39ØFA6Ø A
    9ØØ85A2A5A2C9Ø2DØFA 6ØAD636
    3FØØ34C7164EE          :REM*6
219 DATA 6763A9ØØ8D6563AD6263 8
    DØ1DDA9ØØ85A2A5A2C9 649ØFAA
    ØØØB9ØØ1DFØ24          :REM*31
22Ø DATA C92ADØØ62Ø5B644CEE63 C
    93Ø9ØØEC93ABØØA38E9 3ØDØØ2A
    9ØA2Ø7463EE65          :REM*29
221 DATA 63AC6563DØD72Ø3864AC 6
    663ADØ1DD291ØFØØ4A5 D3FØØ16
    Ø2Ø5B6488DØEE          :REM*95
222 DATA 2Ø2464AD61638DØ1DDA9 Ø
    Ø85A2A5A2C9B49ØFA4C B3632Ø7
    DFFØD72454449          :REM*87
223 DATA 414C494E472E2E2E2Ø2Ø Ø
    Ø6Ø2Ø7DFFØD6E554D42 4552Ø4
    F462Ø54524945          :REM*233
224 DATA 533A2ØØØA9ØØAE67632Ø 3
    28EA9ØD4CD2FFA9ØØ85 A2A5A2C
    93C9ØFA6ØA9ØØ          :REM*124
225 DATA 85A2A5A2C9149ØFA6ØEE 6
    7632ØCCFFA2Ø52Ø C9FF A9412ØD
    2FF2Ø6664A954          :REM*144
226 DATA 2ØD2FF2Ø6664A9ØD2ØD2 F
    FA9ØØ85A2A5A2C95A9Ø FAAØØØB
    9FB55FØØ92ØD2          :REM*Ø
227 DATA FF2Ø6664C8DØF2AØØØB9 Ø
    Ø1DFØØ92ØD2FF2Ø6664 C8DØF2A
    9ØD2ØD2FFA9ØØ          :REM*187
228 DATA 85A2A5A2C95A9ØFA2ØCC F
    F2Ø3864AC6663ADØ1DD 291ØFØØ
    4A5D3FØØ16Ø2Ø          :REM*217
229 DATA 5B6488DØEEA2Ø52Ø C9FF A
    9412ØD2FFA9ØD2ØD2FF A9ØØ85A
    2A5A2C9B49ØFA          :REM*236
23Ø DATA 2Ø24644C71642Ø965B2Ø 7
    DFF93ØDØDØD72756E74 65726D2
    D313238 2Ø6175         :REM*73
231 DATA 746F6469616C6572ØD2D 2
    D2D2D2D2D2D2D2D2D2D2D 2D2D2D2
    D2D2D2D2D2D2D2D        :REM*129
232 DATA 2DØDØDØD73656C656374 3
    AØD3C2Ø312Ø3E2Ø3D2Ø 3136353
    Ø2Ø6449414C45          :REM*22
233 DATA 52ØD3C2Ø322Ø3E2Ø3D2Ø 3
    136363Ø2Ø6449414C45 52ØD3C2
    Ø332Ø3E2Ø3D2Ø          :REM*121
234 DATA 3136373Ø2F6841594553 2
    Ø6449414C4552ØDØØ2Ø 895DC93
    1FØØ9C932FØ25          :REM*235
235 DATA C933FØ416Ø2Ø7DFFØD31 3
    6353Ø2Ø6D4F44454DØD ØØA92Ø8
    D6263A9ØØ8D61          :REM*214
236 DATA 638D63634CØ1662Ø7DFF Ø
    D3136363Ø2Ø6D4F4445 4DØDØØA
    92Ø8D6163A9ØØ          :REM*74
237 DATA 8D62638D63634CØ1662Ø 7
    DFFØD3136373Ø2F6841 5945532
    Ø6D4F44454DØD          :REM*185
238 DATA ØØA92Ø8D6263A9ØØ8D61 6
    3A9Ø18D63634C1666A9 2Ø8DØ3D
    DAD61638DØ1DD          :REM*2Ø
239 DATA A9ØØ85A2A5A2C9649ØFA A
    9ØØ8D67632Ø7DFFØDØD 656E746
    5722Ø72656469          :REM*74
24Ø DATA 616C2Ø64656C61792Ø28 4
    3522Ø3D2Ø323Ø2Ø5345 4353293
    A2ØØØAØ148C66          :REM*Ø
241 DATA 63A9Ø28D69762Ø6B76FØ Ø
    62Ø6E728C6663 2Ø7DFF ØDØD617
    5746F6469616C          :REM*185
242 DATA 65722Ø6D656E75ØDØD73 6
    56C6563743AØD3C2Ø31 2Ø3E2Ø3
    D2Ø654E544552          :REM*217
243 DATA 2Ø6E554D4245522Ø544F 2
    Ø6449414CØD3C2Ø322Ø 3E2Ø3D2
    Ø6449414C2Ø66          :REM*166
244 DATA 524F4D2Ø7Ø484F4E452Ø 6
    24F4F4BØD3C2Ø332Ø3E 2Ø3D2Ø6
    C4F414142Ø412Ø         :REM*2Ø9
245 DATA 7Ø484F4E452Ø624F4F4B Ø
    D3C2Ø342Ø3E2Ø3D2Ø73 4156452
    Ø412Ø7Ø484F4E          :REM*8Ø
246 DATA 452Ø624F4F4BØD3C2Ø35 2
    Ø3E2Ø3D2Ø6544495 42Ø 412Ø7Ø4
    84F4E452Ø624F          :REM*23
247 DATA 4F4BØDØDØØ2Ø895DC931 9
    Ø1ØC936BØØC38E931AA BD19674
    8BD1E67486Ø67          :REM*217
248 DATA 686A6868224B1CB2E92Ø 7
    DFFØDØDØD654E544552 2Ø232Ø5
    44F2Ø4449414C          :REM*166
249 DATA 3A2ØØØA91E8D6976 2Ø6B 7
    6FØ342Ø7DFFØDØD6449 414C494
    E472E2E2EØDØD          :REM*5Ø
25Ø DATA 684F4C442Ø444F574E2Ø 7
    348494654 2Ø4B45592Ø 544F2Ø4
    1424F525421ØD          :REM*251
251 DATA ØDØØ2ØAB636ØØØØØØØ1F 2
    E3E4EA9ØØ8D7A678D7B 672Ø7DF
    FØDØDØD73454C          :REM*35
252 DATA 454354 2Ø6E554D424552 2
    Ø28312D39293A2ØØDØØ 2Ø895DC
    9319Ø11C93ABØ          :REM*135
253 DATA ØD38E931AA8D7B67Ø94Ø 8
    D7A676ØA9ØØ6ØA9FF8D 7B67EE7
    B67AD7B67C9Ø9          :REM*2Ø9
254 DATA FØ1F4818693 12ØD2FF2Ø 7
    DFF2Ø3D2ØØØ68Ø94Ø8D 7A672ØF
    Ø67A9ØD2ØD2FF          :REM*197
255 DATA 4CC6676ØAD7D67AC7A67 4
    CB56AAD7C67AC7A674C B56AAD7
    E67AC7A674CB5          :REM*127
256 DATA 6AAD7F67AC7A674CB56A A
    D8Ø67AC7A674CB56AGØ A9Ø28DØ
    ØFF6ØA9ØØ85FA         :REM*218
257 DATA A94Ø85FBA9ØØA891FAC8 D
    ØFBE6FBA6FBEØ4ADØF3 AØØ2B94
    86899ØØ49881Ø          :REM*4
258 DATA F76Ø544642ØØ2Ø7DFFØD Ø
    DØD6449414C2Ø66524F 4D2Ø7Ø4
    84F4E45424F4F          :REM*2Ø9
259 DATA 4BØDØØ2Ø476A2ØC1672Ø 8
    167DØØ34CØ1662Ø7DFF ØDØD6E4
    F572Ø6449414C          :REM*144
26Ø DATA 494E473A2ØØØ2ØFØ67A9 Ø
    D2ØD2FF2Ø1E68AØØØAD 7A6785F
    BAD7C6785FAB1          :REM*14Ø
261 DATA FAFØØ699ØØ1DC8DØF699 Ø
    Ø1D2Ø1D682ØAB636Ø2Ø 7DFFØDØ
    DØD7341564152Ø         :REM*143
262 DATA 5448452Ø7Ø484F4E4542 4
    F4F4BØDØØ2Ø476A2Ø1E 68A9ØØ8
    D685EA94A8D69          :REM*25Ø
263 DATA 5EA9ØØAØ4Ø2Ø6A5E2Ø1D 6
    84CØ1662Ø7DFFØDØDØD 6544495
    42Ø5448452Ø7Ø          :REM*183
264 DATA 484F4E45424F4F4BØDØØ 2
    Ø476A2Ø8167DØØ34CØ1 662Ø7DF
    FØDØD6262732Ø          :REM*33
265 DATA 6E414D453A2ØØØ2ØFØ67 A
    91Ø8D69762Ø7DFFØDØD 6262732
    Ø6E414D453A2Ø          :REM*213 ►
```

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```
266 DATA ØØ2Ø6B76FØØ6AD7D672Ø Ø
    76A2Ø7DFFØD7Ø484F4E 452Ø233
    A2ØØØ2ØF967A9          :REM*117
267 DATA 1E8D69762Ø7DFFØDØD7Ø 4
    84F4E452Ø233A2ØØØ2Ø 6B76FØØ
    6AD7C672Ø076A          :REM*228
268 DATA 2Ø7DFFØD735452494E47 2
    Ø23313A2ØØØ2ØØ268A9 1Ø8D697
    62Ø7DFFØDØD73          :REM*197
269 DATA 5452494E472Ø23313A2Ø Ø
    Ø2Ø6B76FØØ6AD7E672Ø Ø76A2Ø7
    DFFØD73545249          :REM*185
27Ø DATA 4E472Ø23323A2ØØ2ØØB 6
    82Ø7DFFØDØD73545249 4E472Ø2
    3323A2ØØ2Ø6B          :REM*7
271 DATA 76FØØ6AD7F672ØØ76A2Ø 7
    DFFØD735452494E472Ø 23333A2
    ØØØ2Ø1468Ø7D           :REM*6
272 DATA FFØDØD735452494E472Ø 2
    3333A2ØØ2Ø6B76FØØ6 AD8Ø672
    ØØ76A4CØ16685          :REM*1Ø3
273 DATA FAAD7A6785FBAØØØB9ØØ 1
    DFØØ591FAC8DØF691FA 6Ø2Ø7DF
    FØDØDØD6C4F41          :REM*86
274 DATA 442Ø5448452Ø7Ø484F4E 4
    5424F4F4BØDØØ2Ø1E68 A9ØØAØ4
    Ø2ØØ95E2Ø1D68          :REM*118
275 DATA 4CØ166A2Ø2BDØØ49DD48 6
    8DØØ6CA1ØF54C7F6A2Ø 7DFFØDØ
    D635245415449          :REM*132
276 DATA 4E472Ø6E45572Ø7Ø484F 4
    E45424F4F4B2E2E2EØD ØØ2Ø246
    868684CØ1666Ø          :REM*39
277 DATA AD7E6785FAAD7A67DØØ1 6
    Ø85FBA2Ø52Ø6C9FFAØØØ B1FAFØØ
    DAABDØØØE2ØD2          :REM*62
278 DATA FF2Ø6664C8DØEF2ØCCFF 6
    ØAD7F674C836AAD8Ø67 4C836A8
    4FB85FAAØØØB1          :REM*2Ø8
279 DATA FAFØØ62ØD2FFC8DØF66Ø 2
    Ø7DFFØ7Ø7Ø7Ø7ØØ2Ø8C 5A6Ø493
    ØØØA2ØF2ØC3FF          :REM*57
28Ø DATA A9Ø2A2D2A Ø6A2ØBDFFA9 Ø
    FA2Ø8A82ØBAFF2ØCØFF 2ØF26A6
    Ø2ØCCFFA5BA2Ø           :REM*Ø
281 DATA B4FFA96F85B92Ø96FF2Ø A
    5FF8D2F6B2ØA5FF8D3Ø 6B2ØA5F
    FC9ØDDØF92ØAB          :REM*31
282 DATA FFAD2F6BC93ØFØ162Ø7D F
    FØDØD6449534B2Ø6552 524F523
    A2ØØØØØØØ386Ø          :REM*2
283 DATA 186ØØØØØ5Ø5Ø535Ø2Ø9A 5
    EDØØ2386Ø2Ø7DFFØDØD 73656C6
    563743A2Ø3C7Ø          :REM*148
284 DATA 3E524F4752414D2Ø3C73 3
    E455155454E5449414C ØDØØ2Ø8
    95D482ØD2FFA9          :REM*173
285 DATA ØD2ØD2FF68C953DØØAA2 Ø
    28E366B8E376B186ØA9 5ØA2ØØ8
    E366BE88E376B          :REM*212
286 DATA 186Ø2ØD56A2Ø7DFFØDØD Ø
    D7Ø554E54455220755Ø 4C4F414
    421ØDØØ2Ø3C6B          :REM*59
287 DATA 9ØØ8A9ØF2ØC3FF4CC66A A
    D6A76A2ØØAØ1D2ØBDFF A2ØØ2Ø6
    8FFA9Ø2A2Ø8AC          :REM*243
288 DATA 366B2ØBAFF2ØCØFF9Ø1Ø 2
    ØF26AA9Ø22ØC3FFA9ØF 2ØC3FF4
    CC66A2ØF26ABØ          :REM*2Ø2
289 DATA EE2Ø153ØAD376B8D1B38 2
    ØØC3ØADØØØ2C9Ø1FØDB 2Ø153ØA
    D2Ø568D18382Ø          :REM*57
29Ø DATA Ø63Ø4CD76B2ØD56A2Ø7D F
    FØDØDØD7Ø554E544552 2Ø644F5
    74E4C4F414421          :REM*25Ø
291 DATA ØDØØ2Ø3C6B9ØØ8A9ØF2Ø C
    3FF4CC66A2Ø153Ø2ØØ9 3ØADØØØ
    2C9Ø1FØ2BAD1B          :REM*89
292 DATA 38AABD386BAØ572ØBE5E A
    D6A76A2ØØAØ1D2ØBDFF A2ØØ2Ø6
    8FFA9Ø2A2Ø8A8          :REM*95
293 DATA 2ØBAFF2ØCØFF9Ø1Ø2ØF2 6
    AA9Ø22ØC3FFA9ØF2ØC3 FF4CC66
    A2ØF26ABØEEA2          :REM*241
294 DATA Ø12Ø68632ØC2E62Ø153Ø 2
    ØØ33ØA2Ø12Ø68634C6B 6C2Ø7DF
    F931111111111          :REM*171
295 DATA 1111111111111111111 1
    1111111117452414E53 4645523
    A2ØØØA9ØØAØ1D          :REM*166
296 DATA 2ØE255A9ØD4CD2FF2ØBE 5
    EAD6A76A2ØØAØ1D2ØBD FFA2ØØ2
    Ø68FFA9Ø8AAA8          :REM*169
297 DATA 2ØBAFF4CCØFFA9168D18 D
    Ø8D2CØAA9Ø48D3BØAA9 Ø18D1F5
    66ØA9F68D18DØ          :REM*56
298 DATA 8D2CØAA93C8D3BØA6Ø2Ø D
    56A2Ø7DFFØDØDØD784D 4F44454
    D2Ø755Ø4C4F41          :REM*52
299 DATA 4421ØDØØ2Ø3C6B9ØØ8A9 Ø
    F2ØC3FF4CC66AAØ522Ø C26C9Ø1
    Ø2ØF26AA9Ø82Ø          :REM*229
3ØØ DATA C3FFA9ØF2ØC3FF4CC66A 2
    ØF26ABØEE2ØDE6C2Ø93 6C2ØØ32
    82ØF16C4C2F6D          :REM*1Ø4
3Ø1 DATA 2ØD56A2Ø7DFFØDØDØD78 4
    D4F44454D2Ø644F574E 4C4F414
    421ØDØØ2Ø3C6B          :REM*127
3Ø2 DATA 9ØØ8A9ØF2ØC3FF4CC66A A
    Ø572ØC26C9Ø1Ø2ØF26A A9Ø82ØC
    3FFA9ØF2ØC3FF          :REM*142
3Ø3 DATA 4CC66A2ØF26ABØEE2ØDE 6
    C2Ø936C2ØØ282ØF16C 4C826DØ
    Ø15435728995A          :REM*9
3Ø4 DATA 2Ø965B2Ø7DFF93ØDØDØD 7
    55Ø4C4F41442Ø412Ø46 494C452
    Ø746F2Ø534F4D          :REM*86
3Ø5 DATA 454F4E4521ØD2D2D2D2D 2
    D2D2D2D2D2D2D2D2D2D 2D2D2D2
    D2D2D2D2D2D2D          :REM*64
3Ø6 DATA 2DØDØD73656C6563743A Ø
    D3C2Ø312Ø3E2Ø3D2Ø7Ø 554E544
    552ØD3C2Ø322Ø          :REM*225
3Ø7 DATA 3E2Ø3D2Ø784D4F44454D 2
    Ø634845434B53554DØD 3C2Ø332
    Ø3E2Ø3D2Ø784D          :REM*98
3Ø8 DATA 4F44454D2Ø637263ØDØD Ø
    Ø2Ø895DC931BØØ34CC6 6AC934B
    ØF938E931FØØA          :REM*182
3Ø9 DATA AABDA36D8DØ6284CFF6C 4
    C9Ø6B2Ø995A2Ø965B2Ø 7DFF93Ø
    DØDØD644F574E          :REM*72
31Ø DATA 4C4F41442Ø412Ø46494C 4
    52Ø66726F6D2Ø534F4D 454F4E4
    521ØD2D2D2D2D          :REM*143
311 DATA 2D2D2D2D2D2D2D2D2D2D 2
    D2D2D2D2D2D2D2D2D2D 2DØDØD7
    3656C6563743A          :REM*197
312 DATA ØD3C2Ø312Ø3E2Ø3D2Ø7Ø 5
    54E544552ØD3C2Ø322Ø 3E2Ø3D2
    Ø784D4F44454D          :REM*239
313 DATA 2Ø634845434B53554DØD 3
    C2Ø332Ø3E2Ø3D2Ø784D 4F44454
    D2Ø637263ØD3C          :REM*194
314 DATA 2Ø342Ø3E2Ø3D2Ø77784D 4
    F44454DØDØDØØ2Ø895D C931BØØ
    34CC66AC935BØ          :REM*68
315 DATA F938E931FØØAAABDA36D 8
    DØ6284C5Ø6D4CØB6CA2 Ø1AD135
    6FØØ1CA8E1356          :REM*24
316 DATA 6ØA2Ø1AD1556FØØ1CA8E 1
    5566ØA2Ø1AD1656FØØ1 CA8E165
    66ØA2Ø1AD1456          :REM*249
317 DATA FØØ1CA8E14562Ø3A6F6Ø 8
    AFØ24A9Ø88D1ØØAA954 8DØØ3BA
    9Ø38DØ13BA937          :REM*189
318 DATA 8D16ØAA9Ø38D17ØAA946 8
    D12ØAA9Ø18D13ØA6ØA9 Ø68D1ØØ
    AA9518DØØ3BA9          :REM*25Ø
319 DATA ØD8DØ13BA9518D16ØAA9 Ø
    D8D17ØAA9448D12ØAA9 Ø68D13Ø
    A6ØØØAD856FDØ          :REM*5Ø
32Ø DATA 1ØA9Ø18D856FA92Ø8DØ1 D
    DA9ØØ8DØ3DD6ØA9ØØ8D 856FA9Ø
    Ø8DØ1DDA92Ø8D          :REM*38
321 DATA Ø3DD6Ø2Ø965B2Ø7DFF93 Ø
    DØDØD72756E7465726D 2D31323
    82Ø6465666175          :REM*193
322 DATA 6C74733AØD2D2D2D2D2D 2
    D2D2D2D2D2D2D2D2D2D 2D2D2D2
    D2D2DØDØD3C2Ø          :REM*161
323 DATA 312Ø3E2Ø3D2Ø73455542Ø 6
    34F4C4F5253ØD3C2Ø32 2Ø3E2Ø3
    D2Ø7Ø554E5445          :REM*24Ø
324 DATA 522Ø624C4F434B53495A 4
    5ØD3C2Ø332Ø3E2Ø3D2Ø 784D4F4
    4454D2Ø745241          :REM*136
325 DATA 4E534C415445ØD3C2Ø34 2
    Ø3E2Ø3D2Ø784D4F4445 4D2Ø646
    C652Ø73435245          :REM*252
326 DATA 454EØD3C2Ø352Ø3E2Ø3D 2
    Ø784D4F44454D2Ø7Ø41 442Ø735
    452495Ø5Ø494E          :REM*135
327 DATA 47ØD3C2Ø362Ø3E2Ø3D2Ø 6
    348414E47452Ø7Ø4152 4954595Ø
    D3C2Ø372Ø3E2Ø          :REM*251
328 DATA 3D2Ø6348414E47452Ø77 4
    F52442Ø6C454E475448 ØD3C2Ø3
    82Ø3E2Ø3D2Ø63          :REM*28
329 DATA 48414E47452Ø73544F5Ø 2
    Ø62495453ØD3C2Ø392Ø 3E2Ø3D2
    Ø6C494E454645          :REM*114
33Ø DATA 454453206F4E2Ø2F2Ø6F 4
    646ØD3C2Ø3Ø2Ø3E2Ø3D 2Ø64454
    C455445206B45          :REM*42
331 DATA 592Ø76414C5545ØDØDØØ 2
    Ø895DC93Ø9Ø1ØC93ABØ ØC38E93
    ØAABDF67Ø48BD          :REM*2Ø1
332 DATA ØØ71486Ø767171727373 7
    475757502ØBFEE74BBC 2E18A2F
    5Ø1ØØ2Ø7DFF93          :REM*121
333 DATA ØDØDØD6368616E676520 7
    3637265656E2Ø636F6C 6F72732
    1ØDØD7Ø524553          :REM*15Ø
334 DATA 532Ø3C2Ø312Ø3E2Ø544F 2
    Ø4348414E47452Ø666F 7265677
```

*Continued on p. 98.*

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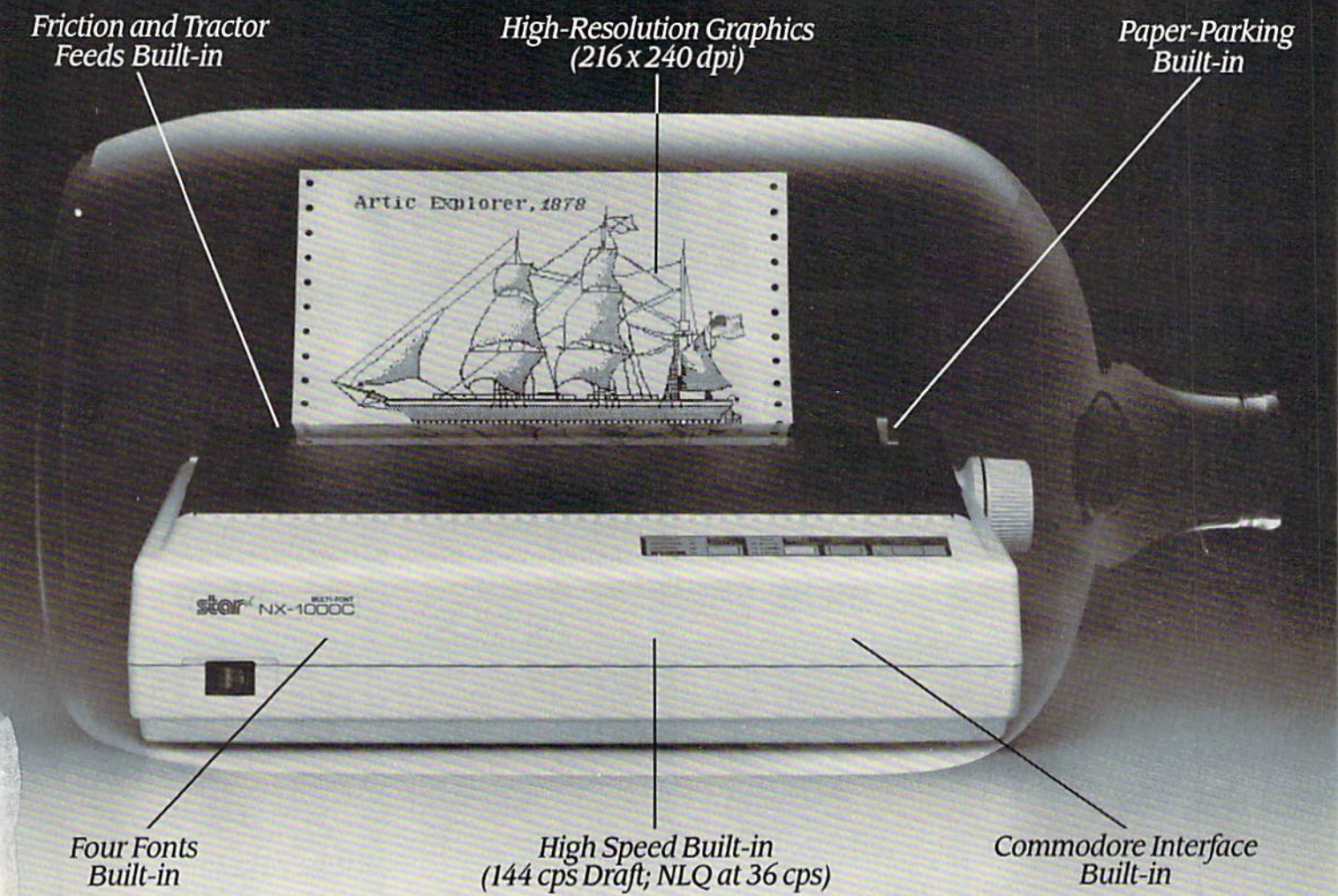
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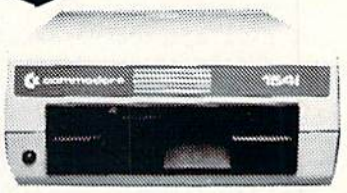

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*From p. 94.*

```
      26F756E64ØD41        :REM*28
335 DATA 4E442Ø3C2Ø322Ø3E2Ø54 4
      F2Ø4348414E47452Ø62 61636B6
      7726F756E64ØD        :REM*56
336 DATA 434F4C4F52532E2Ø614E 5
      92Ø4F5448455522Ø4B45 592Ø455
      849545321ØDØD        :REM*26
337 DATA ØØ2Ø895DC931FØØ5C932 F
      Ø166ØEEØA71AEØA71EØ 1Ø9ØØ5A
      2ØØ8EØA712ØBF        :REM*22Ø
338 DATA 714CØC71EEØB71AEØB71 E
      Ø1Ø9ØØ5A2ØØ8EØB712Ø D1714CØ
      C7124D71ØØ8A5        :REM*134
339 DATA F129FØ1DEF71AA86F18E Ø
      4566Ø24D71Ø16A91A8D ØØD62CØ
      ØD61ØFBADØ1D6        :REM*234
34Ø DATA 29FØ1DEF718DØ1D66Ø8E 2
      1DØ6ØØØØFØ8Ø7ØBØ4Ø2 ØDØAØCØ
      9Ø6Ø1Ø5Ø3ØE2Ø        :REM*69
341 DATA 7DFF93ØDØDØD6348414E 4
      7452Ø7Ø554E5445522Ø 624C4F4
      34B2Ø73495A45        :REM*214
342 DATA 2EØDØD63555252454E54 2
      Ø624C4F434B2Ø53495A 453A2ØØ
      ØAE2Ø56A9ØØ2Ø        :REM*7
343 DATA 328EA9Ø38D69762Ø7DFF Ø
      DØD654E5445522Ø4E45 572Ø734
      95A453A2ØØØ2Ø        :REM*165
344 DATA 6B76FØØC2Ø6E72CØ28BØ Ø
      2AØFF8C2Ø566ØØØØØØØ A91D85F
      BA9ØØ85FAAØØØ        :REM*176
345 DATA AE6A76A9ØØ8D6D72A9ØØ 8
      D6B728D6C728ADØØ34C EØ72AC6
      D72B1FAAC6D72        :REM*227
346 DATA B1FAC93Ø3Ø44C93A1Ø4Ø 4
      8ØE6B722E6C72AD6B72 AC6C72Ø
      E6B722E6C72ØE        :REM*116
347 DATA 6B722E6C72186D6B728D 6
      B72986D6C728D6C7268 38E93Ø1
      86D6B728D6B72        :REM*111
348 DATA 9ØØ3EE6C72EE6D72CADØ B
      6189ØØ138AD6C72AC6B 726Ø2Ø7
      DFFØDØDØD6348        :REM*255
349 DATA 414E47452Ø784D4F4445 4
      D2Ø644546415 54C5453 3AØDØD6
      1534349492Ø74        :REM*25
35Ø DATA 52414E534C415445 2Ø4F 4
      E3F2Ø2Ø792F6EØD2864 4546415
      54C542Ø49532Ø        :REM*39
351 DATA 6E6F2Ø7472616E736C61 7
      4696F6E29ØDØØ2Ø895D A2ØØC95
      9DØØ2A28Ø8EØ7        :REM*129
352 DATA 286Ø2Ø7DFFØDØDØD6348 4
      14E47452Ø784D4F4445 4D2Ø644
      54641554C5453        :REM*167
353 DATA 3AØDØD7553452Ø646C65 2
      Ø6D41534B494E472Ø28 464F522
      Ø7Ø632Ø7Ø5552        :REM*2Ø1
354 DATA 53554954293F2Ø792F6E Ø
      D2864454641554C542Ø 4953Ø6
      E6F2Ø646C652Ø        :REM*8
355 DATA 6D61736B696E6729ØDØØ 2
      Ø895DA2ØØC959DØØ2A2 8Ø8EØ92
      86Ø2Ø7DFFØDØD        :REM*172
356 DATA ØD6348414E47452Ø784D 4
      F44454D2Ø6445464155 4C54533
      AØDØD73545249        :REM*162
357 DATA 5Ø2Ø654E442Ø4F462Ø66 4
      94C452Ø7Ø414444494E 473F2Ø7
      92F6EØD286445        :REM*162
358 DATA 4641554C542Ø49532Ø79 6
      5732C2Ø735452495Ø5Ø 494E472
      Ø4F4E29ØDØØ2Ø        :REM*163
359 DATA 895DA2ØØC94EDØØ2A28Ø 8
      E2F286ØØ2Ø6ØAØEØ2Ø 7DFFØDØ
      DØD6348414E47        :REM*115
36Ø DATA 452Ø7Ø4152495593AØD 6
      3555252454E542Ø5345 5454494
      E473A2ØØØAD11        :REM*32
361 DATA ØADØØB2Ø7DFF6E4F4E45 Ø
      Ø4CAA74C92ØDØØA2Ø7D FF6F444
      4ØØ4CAA74C96Ø        :REM*189
362 DATA DØØB2Ø7DFF6556454EØØ 4
      CAA74C9AØDØØB2Ø7DFF 6D41524
      BØØ4CAA74C9EØ        :REM*24Ø
363 DATA DØØC2Ø7DFF735Ø414345 Ø ►
```


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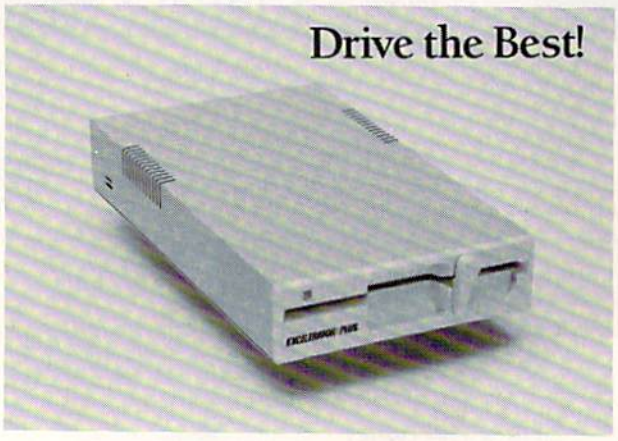


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```
    Ø4CAA742Ø7DFF3F3F3F 3FØØ2Ø7
    DFFØD73656C65       :REM*236
364 DATA 63743AØDØD3C2Ø3Ø2Ø3E 2
    Ø3D2Ø6E4F4E45ØD3C2Ø 312Ø3E2
    Ø3D2Ø6F4444ØD       :REM*146
365 DATA 3C2Ø322Ø3E2Ø3D2Ø6556 4
    54EØD3C2Ø332Ø3E2Ø3D 2Ø6D415
    24BØD3C2Ø342Ø       :REM*2Ø2
366 DATA 3E2Ø3D2Ø735Ø4143450D Ø
    DØØ2Ø895DC93Ø9ØØEC9 35BØØA3
    8E93ØAABD2A74       :REM*196
367 DATA 8D11ØA6ØØØØØØØØØØ6Ø 4
    Ø2ØØØAD1ØØAA2Ø5296Ø DD1Ø75F
    ØØ5E8EØØ99ØF6       :REM*37
368 DATA 8E18562Ø7DFFØDØDØD63 4
    8414E47452Ø774F5244 2Ø6C454
    E4754483AØDØD       :REM*21Ø
369 DATA 63555252454E542Ø6C45 4
    E4754483A2ØØØAE1856 A9ØØ2Ø3
    28E2Ø7DFFØD6E       :REM*113
37Ø DATA 554D42455224F462Ø64 6
    174612Ø424954532Ø28 352D382
    93A2ØØDØØ2Ø89       :REM*249
371 DATA 5DC9359Ø19C939BØ1538 E
    93ØAABD1Ø758D1Ø75AD 1ØØA299
    FØD1Ø758D1ØØA       :REM*54
372 DATA 6Ø2Ø7DFFØDØDØD634841 4
    E47452Ø73544F5Ø2Ø62 4954533
    AØDØD73656C65       :REM*154
373 DATA 63742Ø3C2Ø3Ø2Ø3E2Ø4F 5
    22Ø3C2Ø312Ø3E2Ø7374 6F7Ø2Ø6
    269743AØDØØ2Ø       :REM*29
374 DATA 895DC93ØDØØ9AD1ØØAØ9 8
    Ø8D1ØØA6ØAD1ØØA297F 8D1ØØA6
    ØA2ØAADØAØFFØ       :REM*189
375 DATA Ø2A2ØØ8EØAØF6Ø2Ø7DFF 9
    3ØDØDØD6348414E4745 2Ø64454
    C4554452Ø6B45       :REM*233
376 DATA 592Ø56414C55452EØDØD 6
    3555252454E542Ø7641 4C55453
    A2ØØØAE14ØEA9       :REM*1Ø3
377 DATA ØØ2Ø328EA9Ø38D69762Ø 7
    DFFØDØD654E5445522Ø 4E45572
    Ø76414C55453A       :REM*4
378 DATA 2ØØØ2Ø6B76FØØB2Ø6E72 8
    C14ØEA91499ØØØF6ØØØ ØØA9ØØ8
    D6A762ØCCFF2Ø       :REM*98
379 DATA 4B5C2ØE4FFFØFB2Ø585C C
    9ØDDØØF2ØD2FFAE6A76 A9ØØ9DØ
    Ø1DAE6A766ØC9       :REM*145
38Ø DATA 14DØØ62ØD3764C7376C9 1
    8DØØA2ØD376AD6A76DØ F8FØCAA
    C6A76CC6976DØ       :REM*221
381 DATA Ø8A9Ø72ØD2FF4C7376A8 2
    97FC92ØBØØ34C737698 AE6A769
    DØØ1D2ØD2FFEE       :REM*197
382 DATA 6A764C7376AE6A76FØØB C
    E6A76A99D2ØD2FF2Ø58 5C6Ø2Ø7
    DFFØDØD644953       :REM*243
383 DATA 4B2Ø6449524543544F52 5
    93AØD7553452Ø3C6E6F 2Ø73637
    26F6C6C3E2Ø54       :REM*2Ø
384 DATA 4F2Ø5Ø415553452CØD41 4
    E442Ø736869667420 6B 6579205
    44F2Ø41424F52       :REM*115
385 DATA 54ØDØD12ØØA2ØØAØ1DAD 6
    A762ØBDFFA9ØØA2Ø8AØ 6Ø2ØBAF
    F2ØCØFFBØ4CA2       :REM*142
386 DATA ØØ2ØC6FF2ØB4B8AØØ384 6
    3A5D3DØ3C2ØCFFF856Ø A59ØD03
    32ØCFFF8561A5       :REM*174
387 DATA 9ØDØ2AC663DØEA2ØØ7BA A
    9ØØA2Ø8AØØ32Ø5DBAA9 2Ø2ØD2F
    F2ØCFFFØØ9A6        :REM*137
388 DATA 9ØDØØC2ØD2FF9ØF22ØB4 B
    8AØØ2DØBE2ØCCFFA9ØØ 382ØC3F
    F2Ø6F5D6Ø2Ø96       :REM*164
389 DATA 5BA2Ø8866ØA9ØØ856285 B
    7AA2Ø68FF2Ø7DFF93ØD ØD654E5
    4455220644953       :REM*244
39Ø DATA 4B2Ø634F4D4D414E442Ø 2
    84F522Ø24293A2ØØØA9 1E8D697
    62Ø6B76ADØØ1D       :REM*212
391 DATA C924DØØ34CE476A9ØØA2 Ø
    8AØØF2ØBAFF2ØCØFFBØ 35A2ØØ2
    ØC9FFBØ2EA2FF       :REM*49
392 DATA ADØØ1DC94ØFØØBE8BDØØ 1►
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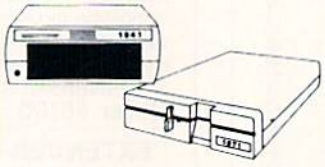

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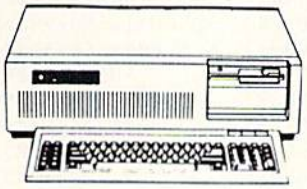

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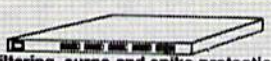

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```
    DFØØ52ØD2FF9ØF52ØCC FFA2ØØ2
    ØC6FFBØ1Ø2ØCF          :REM*249
393 DATA FF2ØD2FFC9ØDFØØ6A59Ø 2
    9BFFØFØ4C9177ØØA9Ø3 85E52ØD
    C782ØEC78ADØ4          :REM*57
394 DATA 5685F1A9ØØ85F42ØB7FF 2
    9Ø8DØ2ØA2Ø52ØC6FF2Ø E4FF297
    FAABDØØØFFØ1Ø          :REM*153
395 DATA AE1356FØØ5482Ø1Ø5D68 2
    ØD2FF4C34782ØE1FFDØ Ø6A9Ø18
    D1F566Ø2ØCCFF          :REM*5
396 DATA 2ØE4FFFØBAC9ØDDØØ62Ø A
    E784C2E78C914DØØ34C 9D78C91
    8FØF2AE29789D          :REM*219
397 DATA ØØ1DE8EØ5ØFØE48E2978 4
    C3178AE2978FØØ9CE29 78CAA92
    Ø9DØØ1D4C3178          :REM*116
398 DATA A2Ø52ØC9FFAE2978FØ1C A
    ØØØB9ØØ1DAABDØØØE2Ø D2FFA9Ø
    Ø85A2A5A2C9Ø4          :REM*2Ø5
399 DATA DØFAC8CC2978DØE6A9ØD 2
    ØD2FF4CCCFFAØ5ØA92Ø 99ØØ1D8
    81ØFAA2ØØ8E29          :REM*31
4ØØ DATA 786ØADØØ56FØ13AØØØB9 Ø
    Ø1D2Ø467AØ98Ø2Ø1779 C8CØ5ØD
    ØFØ6ØAØØØB9ØØ         :REM*34
4Ø1 DATA 1D2Ø467AØ98Ø992Ø8Ø4C8 C
    Ø5ØDØFØ6Ø48A212A9ØØ 2ØCCCDE
    8982ØCCCDA21F          :REM*166
4Ø2 DATA 682ØCCCDA212A9ØØ2ØCC C
    DA212A9Ø82ØCCCDE898 2ØCCCDA
    21FADØ4562ØCC          :REM*242
4Ø3 DATA CDA212A9ØØ4CCCCDØØØØ Ø
    ØØØAD4E79A2Ø18E4C79 85FAAD4
    F7985FBA95Ø85          :REM*171
4Ø4 DATA B2AD1Ø5685B3AØØØ8E4C 7
    92Ø527AAE4C79C9ØDDØ Ø9A91F9
    9ØØØBC84C8E79          :REM*36
4Ø5 DATA 2Ø467A99ØØØBC8CCØF56 D
    ØDE88C884FE88B9ØØØB 91B2881
    ØF8A4FE189865          :REM*23Ø
4Ø6 DATA FA85FAA5FB69ØØC9EFDØ Ø
    2A9Ø485FBEØØ1DØØ38C 4D79CCØ
    F56FØØ8A92Ø91          :REM*95
4Ø7 DATA B2C84CB479A92Ø91B218 A
    5B26DØF5685B29ØØ2E6 B3E8EØ1
    6FØØ34C6879AD          :REM*5Ø
4Ø8 DATA ØØ56DØØ34C3F7AA91ØA2 1
    22ØCCCDE8A9ØØ2ØCCCD AØØØ84B
    2A91385B3AØ5Ø          :REM*28
4Ø9 DATA B1B22ØCACDC8DØF8E6B3 A
    5B3C919DØFØB1B22ØCA CDC8CØE
    ØDØF6A918A212          :REM*24
41Ø DATA 2ØCCCDE8A9ØØ2ØCCCDA9 1
    385B3ADØ4562ØCACDC8 DØF7E6B
    3A5B3C919DØEF          :REM*212
411 DATA ADØ4562ØCACDC8CØEØDØ F
    5AD4F79AE4E796Ø4829 8Ø4A85F
    E68293FØ5FE6Ø          :REM*248
412 DATA A9FAA2Ø14C74FFAD4E79 1
    86D4D798D4E79AD4F79 69ØØC9E
    FDØØ7A9ØØ8D4E          :REM*2Ø2
413 DATA 79A9Ø48D4F794C5Ø79AD 4
    E7985FAAD4F7985FB2Ø A17A2ØA
    17ABØØ9AØØØ2Ø          :REM*96
414 DATA 527AC9ØDDØF2A5FA8D4E 7
    9A5FB8D4F794C5Ø79C6 FAA9FFC
    5FADØ14C6FBA5          :REM*15Ø
415 DATA FBC9Ø4BØØAA9Ø485FBA9 Ø
    Ø85FA386Ø85FB186Ø      :REM*138
416 DATA -1                :REM*19
```

**Listing 3. RUN Term 128 Punter program.**

```
1Ø OPEN 8,8,8,"PUNTER128,P,W"
                           :REM*168
15 FAST                    :REM*86
2Ø READ A$:IF A$="-1" THEN CLOS
    E8:END                 :REM*176
25 IF LEN(A$)<62 THEN 55
                           :REM*232
```

*Continued on p. 106.*


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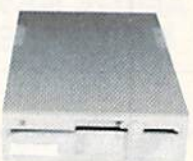

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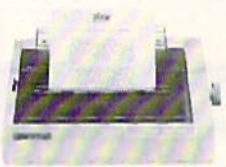

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| Super Star Soccer | 21.00 |

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|---|---|
| Hard Ball | $17.00 |
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|---|---|
| Jeopardy<br>Wheel of Fortune<br>Family Feud | $9.95 each |

### Berkeley Softworks

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|---|---|
| GEOS | $36.00 |
| Fontpak 1 | 18.00 |
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|---|---|
| GEOS Tricks and Tips | 9.00 |
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| MACH-128 | $30.00 |
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| Superbase 128 | $60.00 |
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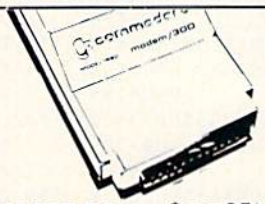

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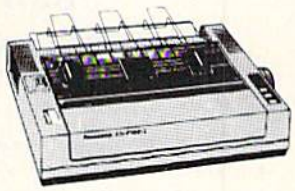

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*From p. 102.*

```
3Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
   2Ø)+MID$(A$,43,29)    :REM*35
35 N=LEN(B$)/2           :REM*38
4Ø FOR I=1 TO N          :REM*2Ø
45 H$=MID$(B$,I*2-1,2):H=DEC(H$
   )                     :REM*222
5Ø PRINT#8,CHR$(H);:NEXT:GOTO 2
   Ø                     :REM*1ØØ
55 IF LEN(A$)<2Ø THEN B$=A$:GOT
   O 7Ø                  :REM*65
6Ø IF LEN(A$)<42 THEN B$=MID$(A
   $,1,2Ø)+MID$(A$,22,(LEN(A$)-
   21)):GOTO 7Ø          :REM*148
65 B$=MID$(A$,1,2Ø)+MID$(A$,22,
   2Ø)+MID$(A$,43,LEN(A$)-42)
                         :REM*8Ø
7Ø N=LEN(B$)/2           :REM*67
75 FOR I=1 TO N          :REM*73
8Ø H$=MID$(B$,I*2-1,2):H=DEC(H$
   )                     :REM*251
85 PRINT#8,CHR$(H);:NEXT:GOTO 2
   Ø                     :REM*129
1ØØ REM PUNTER PROTOCOL FOR RUN
    TERM128              :REM*182
1Ø1 DATA ØØ3ØA9ØØ2CA9Ø32CA9Ø6 2
   CA9Ø92CA9ØC2CA9ØFEA 4C1B3Ø4
   CA1354C953685         :REM*53
1Ø2 DATA 64BA8E1C38A933186564 8
   D313ØA93Ø69ØØ8D323Ø 4C393Ø4
   C573Ø4CØE344C         :REM*84
1Ø3 DATA D6334CD4344C1D354CBØ 3
   54C9536474F4F424144 41434B5
   32F4253594E8D         :REM*23Ø
1Ø4 DATA Ø538A9ØØ8DØØ388DØ138 8
   DØ238A9ØØ8DØ6388DØ7 382Ø813
   62ØF83ØA596DØ         :REM*228
1Ø5 DATA 58ADØ1388DØØ38ADØ238 8
   DØ138ADØØØ28DØ238A9 ØØ8DØ43
   8A9Ø18DØ338AD         :REM*6Ø
1Ø6 DATA Ø5382CØ338FØ16ACØ438 A
   2ØØBDØØ38D9483ØDØØ9 C8E8EØØ
   3DØF24CC43ØØE         :REM*78
1Ø7 DATA Ø338ADØ4381869Ø38DØ4 3
   8C9ØFDØD24C653ØA9FF 8DØ6388
   DØ7384C6D3ØEE         :REM*199
1Ø8 DATA Ø638DØØ3EEØ738ADØ738 Ø
   DØ638FØ13ADØ638C9Ø7 ADØ738C
   9149Ø82A9Ø185         :REM*187
1Ø9 DATA 964C6435A9ØØ85966ØEA 9
   848AD18ØACD19ØAFØ16 AC19ØAB
   1C848EE19ØAA9         :REM*22
11Ø DATA ØØ8596688DØØØ268A84C 2
   331A9Ø28596A9ØØ8DØØ Ø268A84
   8A9Ø385BA686Ø         :REM*31
111 DATA A2Ø52ØC9FFA2ØØB9483Ø 2
   ØD2FFC8E8EØØ3DØF44C CCFF8DØ
   838A9ØØ8DØB38         :REM*2Ø
112 DATA A9Ø28564ACØ8382Ø2A31 A
   9Ø42Ø573ØA596FØØ7C6 64DØF34
   C4831AØØ92Ø2A         :REM*92
113 DATA 31ADØD38FØØ5ADØ838FØ 1
   FADØ4398DØ9388D1738 2Ø8532A
   596C9Ø1FØØCC9         :REM*122
114 DATA Ø2FØDBC9Ø4FØØ4C9Ø8FØ D
   36ØA91Ø2Ø573ØA596DØ C9A9ØA8
   DØ938AØØC2Ø2A         :REM*24
115 DATA 31A9Ø82Ø573ØA596FØØ5 C
   EØ938DØED6ØA9Ø18DØB 38AD1E3
   8FØØ5AØØ2Ø2A          :REM*213
116 DATA 31A9ØB2Ø573ØA596DØED A
   9ØØ8D1E38ADØ438C9ØØ DØ35ADØ
   D38Ø68EE1938          :REM*47
117 DATA DØØ3EE1A382Ø6A33AØØ5 C
   8B166C9FFDØ16A9Ø18D ØD38AD1
   63849Ø18D1638         :REM*241
118 DATA 2Ø6A332Ø4A334CØ8322Ø Ø
   533A92D2CA93A2Ø8C35 AØØ62Ø2
   A31A9Ø82Ø573Ø         :REM*249
119 DATA A596DØEA2Ø6A33AØØ4B1 6
   68DØ9382Ø7733A2Ø52Ø C9FFAØØ
   ØB1662ØD2FFC8         :REM*6Ø
12Ø DATA CCØ938DØF52ØCCFFA9ØØ 6
   ØA92A2Ø8C35AØØ62Ø2A 31A9Ø82
   Ø573ØA596DØED         :REM*113
121 DATA A9ØA8DØ938AØØC2Ø2A31 A
   91Ø2Ø573ØA596FØØ5CE Ø938DØE
   DA9Ø38DØ938AØ         :REM*236
122 DATA Ø92Ø2A31A9ØØ2Ø573ØCE Ø
   938DØF1A9Ø16ØAØØØA9 ØØ8DØ63
```


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```
    88D07382Ø8136       :REM*23Ø
123 DATA 2ØF83ØA596DØ3CADØØØ2 9
    9ØØ39CØØ3BØ1C99ØØ38 CØØ2DØ1
    5ADØØ38C941DØ       :REM*224
124 DATA ØEADØ138C943DØØ7ADØ2 3
    8C94BFØØBC8CCØ938DØ C2A9Ø18
    5966ØA9FF8DØ6       :REM*34
125 DATA 388DØ7384C8F32EEØ638 D
    ØØ3EEØ738ADØ638ØDØ7 38FØ1BA
    DØ638C9Ø6ADØ7       :REM*179
126 DATA 38C91ØDØ9EA9Ø28596CØ Ø
    ØFØØ4A9Ø485964C6435 A9ØØ859
    66ØAD16384901       :REM*158
127 DATA 8D16382Ø6A33AØØ5AD19 3
    81869Ø19166C8AD1A38 69ØØ916
    6A2Ø22ØC6FFAØ       :REM*238
128 DATA Ø72ØCFFF9166C82ØB7FF D
    ØØACC1838DØFØ98484C 4B33984
    8AØØ5C8A9FF91       :REM*152
129 DATA 664C4B33482ØCCFF2ØA1 3
    52Ø7F352ØA135AØØ4B1 668DØ93
    82Ø773368AØØ4       :REM*219
13Ø DATA 91662Ø86336ØA9ØØ8566 A
    D163818693985676ØA9 ØØ8566A
    D163849Ø11869       :REM*67
131 DATA 3985676ØA9ØØ8D12388D 1
    3388D14388D1538AØØ4 AD12381
    871668D12389Ø       :REM*2Ø8
132 DATA Ø3EE1338AD143851668D 1
    438AD15382A2E14382E 1538C8C
    CØ938DØDAAØØØ       :REM*121
133 DATA AD12389166C8AD133891 6
    6C8AD14389166C8AD15 3891666
    ØA9ØØ8DØD388D       :REM*241
134 DATA ØC388D1D38A9Ø18D1638 A
    9FF8D19388D1A382Ø77 33AØØ4A
    9Ø791662Ø6A33       :REM*11Ø
135 DATA AØØ5A9ØØ9166C891662Ø B
    231FØFBA9ØØ8DØØØ26Ø A9Ø18D1
    938A9ØØ8D1A38       :REM*2Ø8
136 DATA 8DØD388D16388DØ5398D Ø
    6398DØC38A9Ø78DØ439 A9ØØ2Ø4
    Ø31ADØD38DØD2       :REM*194
137 DATA 2Ø8A34DØ3C2ØCCFFADØ9 3
    8C9Ø7FØ16A2Ø22Ø9FF AØØ7B9Ø
    Ø392ØD2FFC8CC       :REM*17Ø
138 DATA Ø938DØF42ØCCFFADØ639 C
    9FFDØØ8A9Ø18DØD38A9 2A2CA92
    D2ØD2FF2ØA135       :REM*91
139 DATA A9ØØ4C2E342ØCCFFA93A 2
    ØD2FFAD17388DØ439A9 Ø34C2E3
    4ADØØ398DØE38       :REM*135
14Ø DATA ADØ1398DØF38ADØ2398D 1
    Ø38ADØ3398D1138206A 33AD173
    88DØ938ØØ8633       :REM*127
141 DATA ADØØ39CDØE38DØ1BADØ1 3
    9CDØF38DØ13ADØ239CD 1Ø38DØØ
    BADØ339CD1138       :REM*98
142 DATA DØØ3A9ØØ6ØA9Ø16ØA9ØØ 8
    D19388D1A388DØD388D 16388DØ
    C38A9Ø7186901       :REM*33
143 DATA 8DØ439A9ØØ2Ø4Ø31ADØD 3
    8DØ2Ø2Ø8A34DØ1ØADØ7 398D1B3
    8A9Ø18DØD38A9       :REM*248
144 DATA ØØ4CEF34AD17388DØ439 A
    9Ø34CEF34A9ØØ8DØØØ2 6ØA9ØØ8
    DØD388DØC38A9       :REM*164
145 DATA Ø18D16388D1D38A9FF8D 1
    9388D1A382Ø7733AØØ4 A9Ø7186
    9Ø191662Ø6A33       :REM*73
146 DATA AØØ5A9FF9166C89166AØ Ø
    7AD1B389166A9Ø18D1E 382ØB23
    1FØFBA9ØØ8DØØ       :REM*13
147 DATA Ø26ØEEØC38ADØC38C9Ø3 9
    ØØCA9ØØ8DØC38ADØB38 FØØ7DØ1
    1ADØB38FØØCA2       :REM*64
148 DATA ØØAØØØC8DØFDE8EØ78DØ F
    66Ø48AD1938ØD1A38FØ ØAAD1D3
    8DØØ5682ØD2FF       :REM*194
149 DATA 48686Ø2ØC2E6ADØFØAC9 8
    ØFØF6C992FØF26Ø2Ø6D 362ØF73
    ØA596DØ14ADØØ       :REM*218
15Ø DATA Ø2297F8DØØØ2C9Ø8FØØB C
    9ØDFØØ7C92Ø1ØØ34C1B 36C9619
    ØØDC97BBØØ938       :REM*47
151 DATA E92Ø8DØØØ24CFØ35C941 9
    ØØAC95BBØØ61869Ø8D ØØØ2C9Ø
    8DØØ5A9148DØØ       :REM*13
152 DATA Ø2C922DØØA2ØD2FFA914 2
    ØD2FFA922ADØØØ2C9ØD DØØ7A92►
```


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# RUN TERM 128

```
    Ø2ØD2FFA9ØD2Ø       :REM*166
153 DATA D2FF2Ø6D362ØE4FFFØ93 8
    DØØØ2C913FØ45C9419Ø ØDC95BB
    ØØ918692Ø8DØØ      :REM*241
154 DATA Ø24C4936ADØØØ2C9C19Ø Ø
    AC9DBBØØ638E98Ø8DØØ Ø2C914D
    ØØ5A9Ø88DØØØ2       :REM*2Ø9
155 DATA C983DØØ5A91Ø8DØØØ2A2 Ø
    52ØC9FFADØØ22ØD2FF 2ØCCFF4
    CBØ356ØA9122Ø       :REM*137
156 DATA D2FFA9B82ØD2FFA99D2Ø D
    2FFA9922ØD2FFEAA5D3 C9Ø2DØØ
    768BAEC1C38DØ       :REM*14
157 DATA F9A9Ø18DØØØ26ØAD26Ø3 C
    9BADØØ7AD27Ø3C936FØ 16AD26Ø
    38DØ23BAD27Ø3       :REM*218
158 DATA 8DØ33BA9BA8D26Ø3A936 8
    D27Ø36Ø48A59AC9Ø3DØ Ø4686CØ
    23B9ØØ4686CØ2       :REM*185
159 DATA 3B4A68859E8A4898489Ø 2
    32ØBEE9DØØE2Ø15EABØ ØEA9Ø2A
    ØØØ91B2C884A6       :REM*196
16Ø DATA A59E91B21868A868AAA5 9
    E9ØØ2A9ØØ6Ø2ØØ1374C EC362Ø1
    237AC1BØAC8CC       :REM*131
161 DATA 1AØAFØF48C1BØA88A59E 9
    1CAADØFØA4ABØ1EA91Ø 8DØEDDA
    DØØ3B8DØ4DDAD       :REM*251
162 DATA Ø13B8DØ5DDA9812Ø7FE6 2
    Ø4AE6A9118DØEDD6ØØ7 ØØØØØØØ
    ØØØØØØØ33          :REM*198
163 DATA -1             :REM*17
```

**Listing 4. RUN Term 128 Xmodem program.**

```
1Ø OPEN 8,8,8,"WXMODEM128,P,W"
                        :REM*1ØØ
15 FAST                 :REM*86
2Ø READ A$:IF A$="-1" THEN CLOS
   E8:END               :REM*176
25 IF LEN(A$)<62 THEN 55
                        :REM*232
3Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
   2Ø)+MID$(A$,43,29)   :REM*35
35 N=LEN(B$)/2          :REM*38
4Ø FOR I=1 TO N         :REM*2Ø
45 H$=MID$(B$,I*2-1,2):H=DEC(H$
   )                    :REM*222
5Ø PRINT#8,CHR$(H);:NEXT:GOTO 2
   Ø                    :REM*1ØØ
55 IF LEN(A$)<2Ø THEN B$=A$:GOT
   O 7Ø                 :REM*65
6Ø IF LEN(A$)<42 THEN B$=MID$(A
   $,1,2Ø)+MID$(A$,22,(LEN(A$)-
   21)):GOTO 7Ø         :REM*148
65 B$=MID$(A$,1,2Ø)+MID$(A$,22,
   2Ø)+MID$(A$,43,LEN(A$)-42)
                        :REM*8Ø
7Ø N=LEN(B$)/2          :REM*67
75 FOR I=1 TO N         :REM*73
8Ø H$=MID$(B$,I*2-1,2):H=DEC(H$
   )                    :REM*251
85 PRINT#8,CHR$(H);:NEXT:GOTO 2
   Ø                    :REM*129
1ØØ REM XMODEM PROTOCOL FOR RUN
   TERM128              :REM*63
1Ø1 DATA ØØ284C3Ø284CED2AØØØØ Ø
   ØØØ4ØØØØØØØØØØ8ØØØ ØØØØØØ8
   483ØØØØØ4ØØ43        :REM*146
1Ø2 DATA 4333ØØØØØØØØØØØØØØ1 Ø
   ØØØØØØØØØØØØØØØØØØ A9ØØ8DØ
   F288D11288D1F        :REM*243
1Ø3 DATA 288D2Ø288D2B288D2C28 8
   D2D288D2E288D14288D 2A282Ø6
   C2E2ØE Ø2DA98Ø       :REM*1Ø2
1Ø4 DATA 8D1Ø28A9ØØ8D13288D17 2
   88D18282ØE8292ØE1FF DØØ34CB
   22AAD1728DØ38        :REM*219
1Ø5 DATA ADØB28C9Ø4DØØ34C9C29 C
   918DØØ32ØB72AC916DØ Ø34C5B2
   8C9Ø1DØD4A9Ø4        :REM*232
1Ø6 DATA 8D2528AD1428DØØFAD29 2
   8C955FØØ82Ø732DA955 8D2928A
   DØB282ØBA2CCD        :REM*36
1Ø7 DATA 1528DØBØADØ1Ø4186DØ2 Ø
   418C9FFFØØ62Ø4F2A4C 5B28EE1
   428ADØ1Ø4CD14        :REM*81
1Ø8 DATA 28FØØ9CE1428Ø4F2A4C 5
   B28ADØ628C915FØØD2Ø 322E2Ø4
   92EC9ØØDØE64C        :REM*8
1Ø9 DATA FD28AD182838ED83Ø418 C
   D83Ø4DØD6ADØ628C957 DØ3A2ØF
   52EADØA28C94Ø        :REM*95
11Ø DATA FØØ4C98ØFØØB2ØAØ2A4C 1
   D29A9ØØ2Ø732DEE2A28 AD2A28C
   9Ø4DØ14ADØA28        :REM*234
111 DATA C98ØDØØ5A9Ø72Ø732DA9 Ø
   Ø8D2A282Ø3E2F4C5B28 ADØF28F
   Ø42AØØØA2Ø4BD        :REM*8
112 DATA 85Ø4DD1928DØØ5CA1ØF5 A
   ØØ68CØD28A2Ø82ØC9FF AEØD28B
   D85Ø42CØ7281Ø        :REM*133
113 DATA Ø32ØCE292ØD2FF2ØB7FF D
   Ø27EEØD28AD1Ø28CDØD 28DØDF2
   C11281ØØ34CC8        :REM*245
114 DATA 2AA2ØØBDØ3Ø49D85Ø4E8 1
   ØF78EØF282Ø882A4C5B 282ØB22
   AA98Ø8D1128A2        :REM*18
115 DATA 7FAD2F28DØØEBD85Ø48D 1
   228C91AFØØ7C9ØØFØØ3 4CC729B
   D85Ø4CD1228DØ        :REM*27
116 DATA Ø6CA1ØF54CC82AE88E1Ø 2
   84C4329297FC9419Ø13 C95BBØØ
   FØ92Ø4CE729C9        :REM*198
117 DATA 619ØØ6C97BBØØ229DF6Ø 2
   Ø7C2C2ØE1FFFØ5C2Ø67 2CDØ2AA
   DØ928C98ØFØØ7        :REM*39
118 DATA ADØ628C957DØ1BADØB28 C
   91ØDØØC2ØE829ADØB28 494Ø8DØ
   B286ØC911FØCE        :REM*229
119 DATA C913FØCA6Ø2Ø762C9ØC7 A
   DØ628C957DØ1CA9182Ø 832CA91
   82Ø832C2Ø3E2F        :REM*212
12Ø DATA A9182Ø832CA9182Ø832C 6
   8684CE32A68684C5328 4CB22AE
   E1328A9ØACD13        :REM*76
121 DATA 28FØ59ADØA28C94ØDØØ6 2
   Ø7C2A4C6B2AA9Ø12Ø73 2DADØ62
   8C957DØØ42ØØF        :REM*192
```

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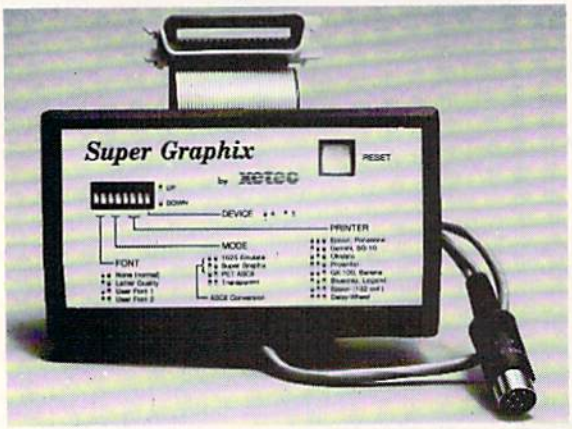
```
122 DATA 2F6ØA9152Ø832C6ØEE2D 2
    8DØØ3EE2E282Ø6A2F6Ø ADØA28C
    94ØDØØ62ØAØ2A          :REM*89
123 DATA 4C9A2AA9ØØ2Ø732DA9Ø6 2
    Ø832C6ØEE2B28DØØ3EE 2C282Ø6
    A2F6ØA9Ø42Ø83          :REM*2Ø9
124 DATA 2C6ØA9182Ø832CA9Ø42Ø E
    52A2Ø9F2D68686Ø29Ø3 2Ø832C6
    ØA9Ø62Ø832CAD          :REM*56
125 DATA Ø628C957DØØF2ØE829C9 Ø
    4DØF9A9Ø62Ø832C2ØBA 2EA9Ø32
    Ø732DA9Ø84CC3          :REM*1ØØ
126 DATA FF2ØE1FFDØØ32ØB72AAD 1
    9ØA8D18ØAA9ØØ8D1F28 8D2Ø288
    D2B288D2C288D          :REM*53
127 DATA 2D288D2E28A9Ø18DØØØ4 8
    DØ1Ø449FF8DØ2Ø42ØE1 FFDØØ62
    ØAC2A2ØB72A2Ø          :REM*189
128 DATA 672CDØFØADØB28C918DØ Ø
    32ØB72AC943FØØ4C915 DØDE8DØ
    6282Ø6C2EAD29          :REM*17
129 DATA 282Ø732DA9Ø38D1728A2 Ø
    Ø8E18288EØC282ØE1FF DØØ34C2
    22C2ØCCFFA2Ø8          :REM*142
13Ø DATA 2ØC6FF2ØE4FF482ØCCFF 6
    82CØ7281ØØ32ØCE298D ØB282ØB
    7FF29C38DØC28          :REM*248
131 DATA DØØCADØB282ØBA2CC983 D
    ØC9FØ2AADØB282ØBA2C CD1628F
    Ø1FA91A8D1228          :REM*27
132 DATA ADØB28C91ADØØ5A9ØØ8D 1
    228AD12288DØB282ØBA 2CCD162
    8DØF8ADØ628C9          :REM*11Ø
133 DATA 15FØØ92Ø322E2Ø5F2E4C D
    Ø2BAD18288D83Ø4A9ØØ 8DØD282
    ØE1FFFØ48AEØD          :REM*13
134 DATA 28BDØØØ42Ø832CEEØD28 A
    D1528CDØD28DØE72Ø7C 2C2Ø672
    CFØØC2ØE1FFFØ          :REM*184
135 DATA 272Ø762C9ØF1BØB8ADØB 2
    8C915DØ15ADØA28C94Ø DØØ62Ø7
    C2A4CBA2BA9Ø1          :REM*2Ø3
136 DATA 2Ø732D4CBA2BC918DØØ3 2
    ØB72AC9Ø6DØC8ADØA28 C94ØDØØ
    62ØAØ2A4C3B2C          :REM*188
137 DATA A9ØØ2Ø732DADØC28FØ19 2
    ØAC2A2Ø7C2CA5A13ØØ5 2Ø672CD
    ØF7ADØC28294Ø          :REM*22
138 DATA FØCC4CE32AEEØ1Ø4A9FF 4
    DØ1Ø48DØ2Ø44C4A2BA2 Ø52ØC6F
    F2ØE4FF8DØB28          :REM*38
139 DATA 2ØB7FF6ØA5A1CD2528 6Ø A
    9ØØ85A185A26Ø48A2Ø5 2ØC9FFA
    DØFØA29Ø3DØF9          :REM*249
14Ø DATA 68A8ADØ928C98ØDØ1C98 C
    91ØFØØFC916FØØBC911 FØØ7C91
    3FØØ34CB52C49          :REM*4Ø
141 DATA 4ØA8A91Ø2ØD2FF982ØD2 F
    F6ØADØB28AE17289DØØ Ø4A8ADØ
    628C915DØØ898          :REM*223
142 DATA 186D18288D1828EE1728 E
    88A6ØEF2CF32CF52CØA 2D1F2D3
    42D492DF12C5E          :REM*22Ø
143 DATA 2D662D6F2D2DØØ2BØØ3A Ø
    Ø57584D4F44454D2Ø5Ø 524F544
    F434F4C2Ø2Ø2Ø          :REM*119
144 DATA ØDØØ5452414E53464552 2
    Ø434F4D5Ø4C4554452Ø 2ØØDØØ5
    452414E534645          :REM*222
145 DATA 522Ø41424F5254454420 2
    Ø2ØØDØØ584D4F44454D 2Ø5Ø524
    F544F434F4C2Ø          :REM*58
146 DATA 2Ø2Ø2ØØDØØ4352432Ø5Ø 5
    24F544F434F4C2Ø2Ø2Ø 2Ø2Ø2Ø2
    ØØDØØ424C4F43          :REM*3
147 DATA 4B532ØØØ2Ø4552524F52 5
    32ØØØ2Ø91ØDØØ48ADØ8 28FØØ26
    86ØA2Ø32ØC9FF          :REM*16
148 DATA 68ØAAABDD92C85C3E8BD D
    92C85C4AØØØB1C3C9ØØ FØØ82ØD
    2FFC8CØØØDØF2          :REM*Ø
149 DATA 6Ø2Ø7C2C24A21ØFC6ØA9 Ø
    Ø8D21288D2228A91Ø8D 2328A92
    18D24286ØA2Ø8          :REM*212
15Ø DATA 4D21288D2128ØE22282E 2
    1289Ø12AD23284D2128 8D2128A
    D24284D22288D          :REM*197
151 DATA 2228CADØE36ØAD1428FØ Ø
    34C592AADØ6282Ø832C EE2728A
    D2728C9Ø3DØ39          :REM*34
152 DATA A9ØØ8D2728ADØ628C957 D
    Ø1ØA9Ø68D2928A9438D Ø628A9Ø
    18D25286ØC943          :REM*1
153 DATA DØ19A9Ø58D2928A9158D Ø
    628A9Ø38D2528A9848D 1528A98
    38D16286Ø2ØA7          :REM*229
154 DATA 2DA2ØØBDØ3Ø48E27282Ø B
    A2DAE2728E8EØ8ØDØEF 6ØAD222
    8CD84Ø4DØØBAD          :REM*124
155 DATA 2128CD83Ø4DØØ3A9ØØ6Ø A
    9Ø16ØAD21288D83Ø4AD 22288D8
    4Ø46Ø2ØAA2EA9          :REM*179
156 DATA ØØ8D2728A9858D1528A9 8
    48D1628A9Ø18D2528AD Ø628C95
    7DØØ6A9Ø28D29          :REM*2Ø5
157 DATA 286ØC943DØØ6A9Ø68D29 2
    86ØA9Ø58D2928A9848D 1528A98
    38D16286ØA985          :REM*163
158 DATA 858BA9Ø4858C6ØE68BDØ Ø
    2E68C6ØA58BC985DØØ7 A58CC9Ø
    4DØØ16ØA58B8D          :REM*168
159 DATA ØD28A58C8DØE28A2Ø82Ø C
    9FF2ØAA2EAØØØB18B2Ø D2FF2ØB
    32EA58BCDØD28          :REM*2Ø2
16Ø DATA DØEFA58CCDØE28DØE82Ø A
    A2E6ØAØØØB9Ø3Ø42CØ7 281ØØ32
    ØCE29A2ØØ818B          :REM*188
161 DATA 2ØB32EC8CØ8ØDØE96Ø2Ø A
    A2EA9Ø18D2528 2Ø7C2C 2Ø672CF
    ØFB2Ø762C9ØF6          :REM*143
162 DATA A9Ø48D2528AD142838ED 2
    A288D1428A9152Ø832C A9Ø12ØC
    22A6Ø2ØBA2EA9          :REM*182
163 DATA Ø62Ø832CA9ØØ2ØC22AA9 Ø
    62Ø832CA9Ø22ØC22AA9 Ø62Ø832 ►
```


# Super Graphix

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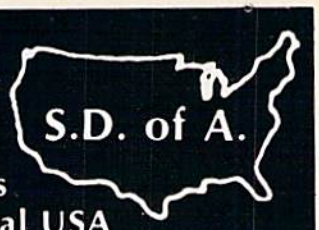


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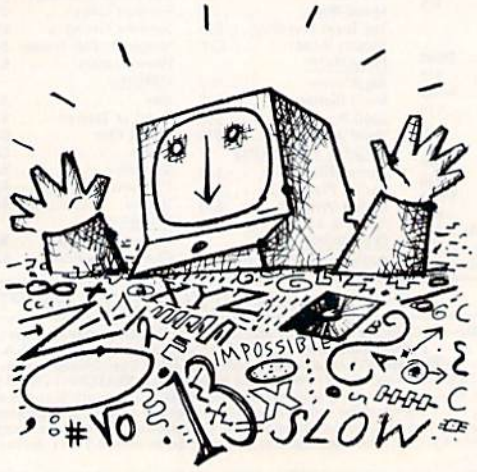
Circle 254 on Reader Service card.

```
    CA9Ø22Ø C22AA9          :REM*89
164 DATA Ø62Ø832CA9ØØ2ØC22A6Ø A
    9Ø82Ø732DA2Ø3869AAE 2B28AD2
    C282Ø328EA9Ø9           :REM*36
165 DATA 2Ø732DAE2D28AD2E282Ø 3
    28EA9ØA2Ø732D6Ø         :REM*1Ø8
166 DATA -1                 :REM*2Ø
```

**Listing 5. RUN Term 128 Tables program.**

```
1Ø OPEN 8,8,8,"TABLES,P,W"
                            :REM*46
15 FAST                     :REM*86
2Ø READ A$:IF A$="-1" THEN CLOS
   E8:END                   :REM*176
25 IF LEN(A$)<62 THEN 55
                            :REM*232
3Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
   2Ø)+MID$(A$,43,29)       :REM*35
35 N=LEN(B$)/2              :REM*38
4Ø FOR I=1 TO N             :REM*2Ø
45 H$=MID$(B$,I*2-1,2):H=DEC(H$
   )                        :REM*222
5Ø PRINT#8,CHR$(H);:NEXT:GOTO 2
   Ø                        :REM*1ØØ
55 IF LEN(A$)<2Ø THEN B$=A$:GOT
   O 7Ø                     :REM*65
6Ø IF LEN(A$)<42 THEN B$=MID$(A
   $,1,2Ø)+MID$(A$,22,(LEN(A$)-
   21)):GOTO 7Ø             :REM*148
65 B$=MID$(A$,1,2Ø)+MID$(A$,22,
   2Ø)+MID$(A$,43,LEN(A$)-42)
                            :REM*8Ø
7Ø N=LEN(B$)/2              :REM*67
75 FOR I=1 TO N             :REM*73
8Ø H$=MID$(B$,I*2-1,2):H=DEC(H$
   )                        :REM*251
85 PRINT#8,CHR$(H);:NEXT:GOTO 2
   Ø                        :REM*129
1ØØ REM REQUIRED TABLES FOR RUN
   TERM128                  :REM*115
1Ø1 DATA ØØØE ØØØ1Ø2Ø3Ø4Ø5Ø6Ø7 Ø
   8Ø9ØAØBØCØDØEØF1Ø11 1213Ø81
   5161718191A1B            :REM*135
1Ø2 DATA 1C1D1E1F2Ø2122232425 2
   62728292A2B2C2D2E2F 3Ø31323
   3343536373839            :REM*122
1Ø3 DATA 3A3B3C3D3E3F4Ø616263 6
   465666768696A6B6C6D 6E6F7Ø7
   1727374757677            :REM*232
1Ø4 DATA 78797A5B5C5D5E5FØØØØ Ø
   ØØØØØØØØØØØØØØØØØØØ ØØØØØØØ
   ØØØØØØØØØØØØØ           :REM*197
1Ø5 DATA ØØØØØØØØØØ7B7C7D7EØØ Ø
   ØØØØØØØØØØØØØØØØØØØ ØØØØØØØ
   ØØØØØØØØØØØØØ           :REM*179
1Ø6 DATA ØØØØØØØØØØØØØØØØØØØ Ø
   ØØØØØØØØØØØØØØØØØØØ ØØ7CØØØ
   ØØØØØØØØØØØØØ           :REM*191
1Ø7 DATA ØØØØØØØØØØØØØØØØØØØ Ø
   ØØØØØØØ6Ø4142434445 4647484
   94A4B4C4D4E4F            :REM*162
1Ø8 DATA 5Ø5152535455565758595 5
   A7B7C7D7EØØØØØØØØØØ ØØØØØØØ
   ØØØØØØØØØØØØØ           :REM*196
1Ø9 DATA ØØØØØØØØØØØØØØØØØØØ Ø
   ØØØØØ7B7C7D7EØØØØØØ ØØØØØØØ
   5ØØØ714Ø9ØAØØ           :REM*157
11Ø DATA ØCØDØØØØØ11ØØ1314ØØ Ø
   ØØØØØØØØ1BØØØØØØØ 2Ø21222
   3242526272829            :REM*171
111 DATA 2A2B2C2D2E2F3Ø313233 3
   435363738393A3B3C3D 3E3F4ØC
   1C2C3C4C5C6C7            :REM*14Ø
112 DATA C8C9CACBCCCDCECFDØD1 D
   2D3D4D5D6D7D8D9DA5B 5C5D5E5
   F6Ø4142434445            :REM*31
113 DATA 464748494A4B4C4D4E4F 5
   Ø515253545556575859 5A7B7C7
   D7E14ØØØØØØØ            :REM*129
114 DATA ØØØ5ØØ714Ø9ØAØØØCØD Ø
   ØØØØØ91ØØØØØØØØØØ ØØØØØØ1
   BØØØØØØØ2Ø21            :REM*38
115 DATA 22232425262728292A2B 2
   C2D2E2F3Ø3132333435 3637383
   93A3B3C3D3E3F            :REM*98
116 DATA 4ØC1C2C3C4C5C6C7C8C9 C
   ACBCCCDCECFDØD1D2D3 D4D5D6D
   7D8D9DA5B5C5D            :REM*183
117 DATA 5E5F6Ø41424344454647 4
   8494A4B4C4D4E4F5Ø51 5253545
   5565758595A7B            :REM*125
118 DATA 7C7D7E14           :REM*227
119 DATA -1                 :REM*23Ø ■
```





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*From p. 16.*

## $463 How Many Colors, Commodore?

Everyone knows the C-64 and C-128 offer only 16 colors. My program creates practically every color in two or three shades. Try it on your C-64 or C-128. You'll be surprised that no one has discovered this trick before now!

```
Ø REM HOW MANY SCREEN COLORS? - AL SPEICHE
  R                                    :REM*5
1Ø PRINT"{SHFT CLR}":T=1               :REM*164
2Ø Q$="{2 COMD Gs}{2 SHFT Ts}{SHFT G}{2 SH
   FT Bs}{SHFT H}{SHFT Y}{3 COMD Ms}{SHFT
   Y}{SHFT H}{2 SHFT Bs}{SHFT G}{SHFT T}{C
   OMD G}":Q$=Q$+Q$:POKE53281,T-1:POKE5328
   Ø,T-1                               :REM*18
3Ø T=T+1:POKE646,T:FOR S =1 TO 5Ø:Q$=MID$(
   Q$,2,55)+LEFT$(Q$,1)                :REM*226
4Ø PRINTQ$:NEXT                        :REM*68
5Ø GOTO 2Ø                             :REM*174
```

—Al Speicher, Saline, MI

## $464 Lou's Sequential Saga

If you want to convert a Basic program on disk into a sequential file for reading it unaltered into a word processor or terminal program, use this one-liner:

```
OPEN 8,8,8,"FILENAME,S,W":CMD8:LIST:PRINT#8:CLOSE8
```

Enter it in Direct mode and be sure you already have a program in memory.

—Louis Wallace, *RUN* Staff

## $465 C-64 Sequential Directory Creator

My program, Sequential Directory Creator, is an alternative to Lou's Sequential Saga. Suppose you want filenames from disk directories incorporated into word processors in text form. Run my program once for every disk you want to capture filenames from, and it will automatically create a sequential file of each disk's directory.

A write-protect tab cannot be on the disk to be cataloged, because the filename you enter at the first prompt will be written to disk as a sequential file that contains all the filenames from that disk. After running my program and creating a sequential file of the directory, simply read that file into your word processor.

```
1Ø REM SEQUENTIAL DIRECTORY - AL FORTIER
                                       :REM*245
2Ø PRINT"{SHFT CLR}INSERT DISK TO READ"
                                       :REM*172
3Ø INPUT"{CRSR DN}ENTER A FILENAME FOR THE
    DISK";F$                           :REM*233
4Ø DIMD$(144):OPEN1,8,Ø,"$Ø"           :REM*73
5Ø GET#1,A$,A$                         :REM*241
6Ø GET#1,A$,A$:IFA$=""THEN CLOSE1:GOTO 12Ø
                                       :REM*183
7Ø GET#1,A$,B$                         :REM*28
8Ø C$=MID$(STR$(ASC(A$+CHR$(Ø))+ASC(B$+CHR
   $(Ø))*256),2)+CHR$(32)              :REM*145
9Ø GET#1,A$:IFA$=""THEN 11Ø            :REM*82
1ØØ D$(I)=D$(I)+A$:GOTO 9Ø             :REM*21Ø
11Ø D$(I)=C$+D$(I):PRINTD$(I):I=I+1:GOTO 6
   Ø                                   :REM*196 ►
```


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```
12Ø OPEN 2,8,2,F$+",S,W"              :REM*176
13Ø FORJ=Ø TO I-1                     :REM*131
14Ø PRINT#2,D$(J):NEXT                :REM*35
15Ø CLOSE 2:END                       :REM*76
```

—AL FORTIER, BOISE, ID

## $466 ALTernative Reset

Are you tired of resetting your C-128 with the reset button? My program literally provides an ALT-ernative by letting you press the ALT key at the top of the keyboard to accomplish the same thing. Type in the program and save it to disk before running it. When you run it, pressing the ALT key in 128 mode resets the system. You can use run-stop/restore to disable it and the F4 key or SYS 4864 to re-enable it.

```
Ø REM ALT RESET - NELSON SEARCY       :REM*144
1Ø KEY 4,"BANK15:SYS4864"+CHR$(13):REM*211
2Ø FOR B= 4864 TO 4892:READ K$:A=DEC(K$):C
   =C+A:POKEB,A:NEXT:IF C<>2566 THEN PRINT
   "ERROR IN DATA":END                :REM*177
3Ø BANK 15:SYS4864                    :REM*121
4Ø DATA 78,A9,D,8D,14,3,A9,13,8D,15,3,58,6
   Ø,AD,D3,Ø,C9,8,FØ,3,4C,65,FA,4C,Ø,EØ,Ø,
   Ø,Ø                                :REM*151
```

—NELSON SEARCY, FOREST CITY, NC

## $467 CONTROL-G ON THE 64

Most C-128 owners know that if they press control-G on their computers, it rings the C-128's ROM bell. My little routine gives the C-64 a control-G key combination that sounds identical to the C-128's bell.

```
Ø REM C128 BELL FOR THE C64 - BARBARA SCHU
  LAK                                 :REM*199
1Ø PRINT"{SHFT CLR}PRESS CTRL-G TO HEAR TH
   E C-128'S BELL."                   :REM*241
2Ø GET K$: IFK$<>"{CTRL G}" THEN 2Ø ':REM*Ø
3Ø GOSUB 5Ø                           :REM*164
4Ø GOTO 2Ø                            :REM*164
5Ø V=54273:POKEV+23,21:POKEV+4,9:POKEV+5,Ø
   :POKEV,48:POKEV+3,32:POKEV+3,33:REM*2Ø9
6Ø RETURN                             :REM*2Ø2
```

—BARBARA SCHULAK, PEPPER PIKE, OH

## $468 WEAR-'N'-TEAR SAVER

When I need to leave my computer for a while, I use my Magic trick, Wear-'n'-Tear Saver, to minimize stress on computer peripherals by keeping them cool when they're not in use. And it saves electricity, as well.

When I want to stop working at my computer for a while, I save my work, turn off the video monitor, remove the disk and turn off the drive. Of course, I always leave the computer on.

When I return, I just turn on the monitor, and my video display instantly appears with the cursor located right where I left it. I then switch on the disk drive, pop in my work disk, initialize it and resume working.

—ALF, MELMAC ■

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## BLANK-IT! 64

A monitor screen at a computer-controlled radio station in my home town is permanently damaged by "screen burn," a condition caused by leaving unchanging data on the screen for long periods of time, which literally burns into the screen. Normally, screen burn can be prevented simply by turning down the brightness of the monitor, regularly changing the screen display or turning the monitor off when not in use.

Sometimes, however, you find you need an extended screen display, and these methods won't work. So I wrote Blank-it!, an extension of the normal C-64 interrupt request (IRQ) routine that blanks the screen about three minutes after the last keypress. Pressing a key brings back the display just as you left it.

The program has three small, machine language routines in the top 134 bytes of the cassette buffer. The first routine installs the program as part of the IRQ routine and is activated by the SYS 890 command. Next, a second routine counts the minutes and blanks the screen. A third routine deactivates Blank-it! with SYS 1009.

After you've saved Listing 1 to disk, place a work disk in the drive, load Blank-it! with "BLANK-IT 64(890)",8,1 and run it with SYS 890 to save a one-block machine language file to your disk.

Once the program is activated, you may change the time between screen blanks by typing in POKE 948,X, where X may range from 1 (a four-second interval) to 43, the de- ►


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fault value (about three minutes). Enter SYS 1009 to disable Blank-it!.

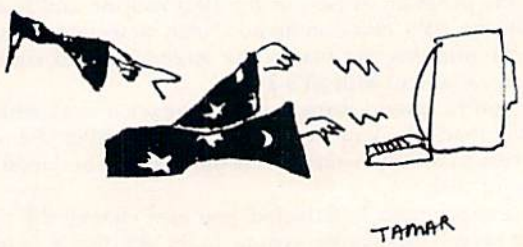
Next month, Mega-Magic will feature a C-128 version of Blank-it!. R

—ROBERT DAVIS, SALINA, KS

**Listing 1. Blank-it! 64 program.**

```
10 REM BLANK-IT 64 BY ROBERT V. DAVIS
                                        :REM*51
20 PRINTCHR$(147)CHR$(142)              :REM*0
30 PRINT"FILE WRITER FOR BLANKIT.":REM*166
40 PRINT"INSERT FORMATTED WORK DISK"
                                        :REM*237
50 PRINT"THEN PRESS RETURN."            :REM*128
60 GETK$:IFK$<>CHR$(13)THEN60           :REM*48
70 PRINTCHR$(17);"WORKING"              :REM*243
80 OPEN5,8,2,"0:BLANK-IT 64(890),P,W"
                                        :REM*77
90 PRINT#5,CHR$(122);CHR$(3);           :REM*110
100 FORX=1TO134                         :REM*197
110 READY:PRINT#5,CHR$(Y);              :REM*175
120 NEXTX                               :REM*171
130 CLOSE5                              :REM*141
140 PRINTCHR$(17);"{SHFT CLR}NOW LOAD BLAN
    K-IT 64(890),8,1"                   :REM*132
150 PRINTCHR$(17);" SYS 890 TO ACTIVATE -
    SYS 1009 TO STOP"                   :REM*210
160 DATA 120,173,20,3,172,21,3,141,238,3,1
    40,239,3,169,155,160,3,141,20,3
                                        :REM*176
170 DATA 140,21,3,169,0,141,236,3,141,237,
    3,88,96,173,17,208,41,16,240,43:REM*16
180 DATA 165,203,201,64,208,57,238,236,3,2
    08,3,238,237,3,173,237,3,201,43:REM*46
190 DATA 208,50,173,32,208,141,240,3,169,0
    ,141,32,208,173,17,208,41,239 :REM*196
200 DATA 141,17,208,108,238,3,165,203,201,
    64,240,22,173,240,3,141,32,208:REM*238
210 DATA 173,17,208,9,16,141,17,208,169,0,
    141,236,3,141,237,3,108,238,3,2
                                        :REM*213
220 DATA 0,49,234,254,120,173,238,3,172,23
    9,3,141,20,3,140,21,3,88,96 :REM*143 ■
```

RUN it right: C-64



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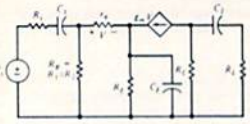

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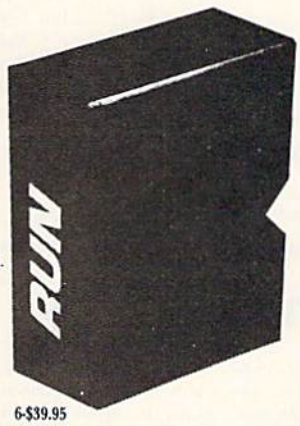


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FEBRUARY

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**INDEX REVISITED—**
Due to space constraints in this issue, we were unable to include the 1987 *RUN* Index. Next month, we plan to bring you this list of all the articles and reviews we published last year.

**REGULAR FEATURES—**
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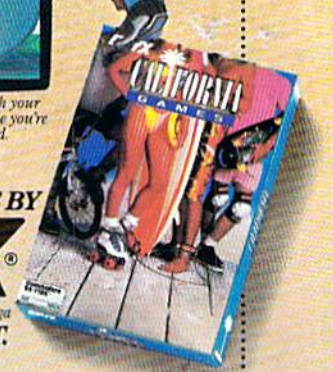


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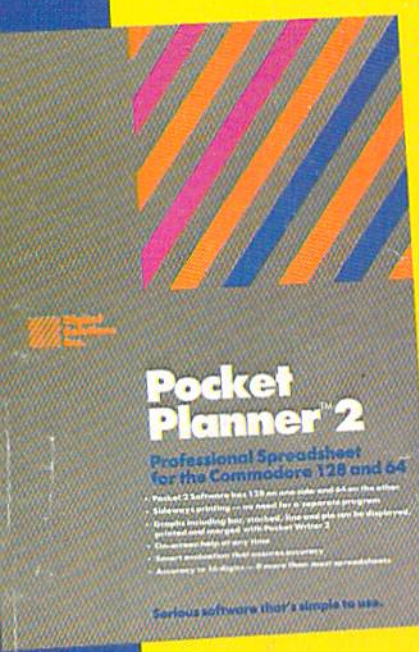


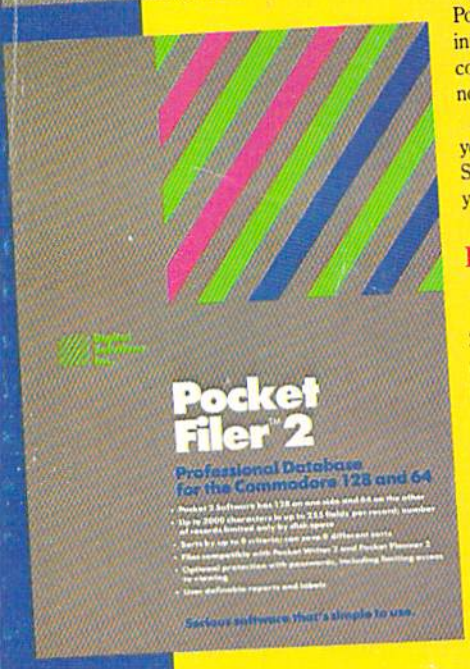


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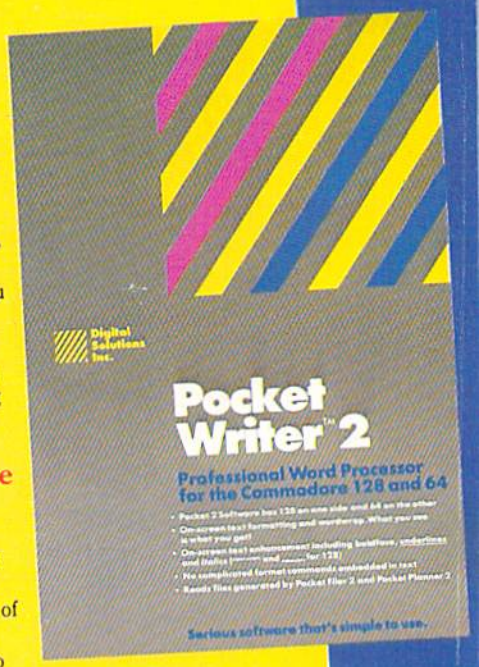


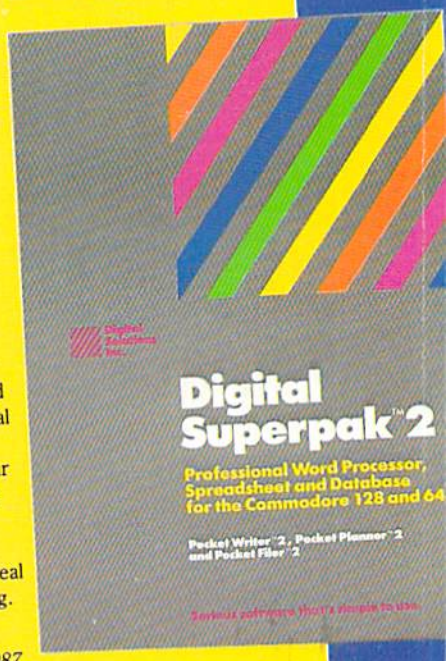
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